



LACUS FORUM XXXIV

Speech and Beyond



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**LACUS
FORUM
XXXIV**

Speech and Beyond

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LACUS FORUM XXXIV

Speech and Beyond

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~e *Dedicated to the memory of David Lockwood* ~e

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PREFACE

THE THEME OF LACUS XXXIV, "Speech and Beyond," was directly inspired by the conference venue. Eastern Kentucky University (EKU) is located in Richmond, Kentucky, on the southeastern edge of the state's famed Bluegrass Region, just south of Lexington, "The Horse Capital of the World." Beginning with the idea of the "horse whisperer," the conference committee considered how the broader topic of "animal communication" could connect with the wide range of research interests represented at LACUS conferences.

The theme "Speech and Beyond" was proposed in the end. It was a perfect fit. What better place to discuss animal communication than the heart of horse country? And the invitation to go "beyond" was very LACUS. In fact, it was a founding principle of the association to provide a forum for the free flow of ideas and discussion from all possible points of view, "going beyond traditional grammatical studies in the various traditional modes."

More than 150 people attended LACUS 34, held July 24–28, 2007. This number included about eighty conference registrants, as well as members of the EKU community and general public, who volunteered to help and came to the keynote speakers. EKU, a regional state university serving central and eastern Kentucky, was honored to host such a prestigious international conference, and crowds turned out for talks delivered by top scholars on popular topics. Everyone loves babies, dolphins, and Alex the parrot, while horses are a Kentucky favorite.

The conference began with welcoming remarks from EKU's provost, Dr. Rodney 'Buz' Piercey, who continued with an unexpected elaboration, sharing examples of his own curiosity about the cognitive and communicative abilities of diverse life forms. It seemed the conference theme could not fail to engage. And hearing the provost talk about communicating with space aliens certainly broke the ice. Ideas would indeed flow freely at EKU.

Next, Lou Herman of the University of Hawaii and the Dolphin Institute delivered the inaugural lecture, "Linguistic and Cognitive Skills of Dolphins." Of course, Richmond, Kentucky, had struck locals as an odd setting for a "dolphin demonstration," but Lou's continuous stream of riveting video clips on the big screen directly connected people with these intelligent creatures.

There were four other invited speakers. Dr. Irene Pepperberg of Harvard University and Brandeis University used her work with celebrity talking parrot Alex to illustrate her lecture, "Communicative and Cognitive Skills of African Grey Parrots."

Dr. Linda Acredolo of UC Davis and Baby Signs, Inc., spoke on, "Signing with Babies Before They Can Talk: A Window into the Infant Mind," reviewing the research that led to the development of the Baby Signs program, an innovative communication method practiced by thousands of families worldwide.

Dr. Sidney Burrus of Rice University and Connexions spoke on "The Book and Beyond," envisioning the next evolution of text publishing. It is this vision that motivated the development of the Connexions system of modular information storage and delivery.

Finally, Richmond, Kentucky, was, in fact, the ideal setting for a horse demonstration. Ms. Neda De Mayo, founder of the California horse sanctuary Return to Freedom, worked with several local horses over the week to illustrate "Communication with Horses: Beyond Whispering."

Conference attendees enjoyed an evening out at Deer Run Stable, a 200-acre woodland ranch, where Neda's demonstration was held. The picnic supper in the barn featured Kentucky Fried Chicken and a local favorite, cornbread salad. Cowboy singer and director of LACUS Sydney Lamb serenaded man and beast on the guitar, while Arle Lommel paid homage to Appalachia's fiddlers by performing on the hurdy-gurdy accompanied by troubadour specialist Roy Hagman.

A second LACUS excursion was an outing to the Madison County Fair & Horse Show. The American Quarter Horse Association-sanctioned running show drew some of the top pole benders and barrel racers in the nation, who ride Kentucky horses. Neda, a specialist in wild horse behavior, provided interesting commentary on these highly controlled equestrian sports.

On their own, conference attendees enjoyed visiting local farms, the Kentucky Horse Park, and the nearby towns of Bybee and Berea, famous for local pottery and regional handicrafts. Film nights were opportunities to see *Grizzly Man*, as well as video clips of Bow, the chimpanzee raised by Aya Katz, and clips from Alex's television appearances.

The conference concluded with a banquet at Richmond's historic Glyndon Hotel, constructed in 1892 with a separate side entrance for ladies and a lengthy side porch for promenading. Dinner featured the hotel's famous spoonbread. Outgoing president Peter Reich delivered the Presidential Address, recalling his own development as a linguist against the backdrop of the development of the field.

In addition to the presentations of the five invited speakers, forty-four other papers were read at LACUS 34. Kara VanDam received the Presidents' Post-Doctoral Prize for best paper by a junior scholar for "Dutch-American Language Planning and Language Shift: Evidence from the Grave." Gabriel Waters received the Presidents' Pre-Doctoral Prize for "A Cognitive and Functional Approach to Non-human Primate Communication."

The conference also featured a workshop on Hard Science Linguistics and a workshop on comparative linguistics of the Mixtecan languages, reflecting on research in the field since Robert Longacre's pioneering study was published fifty years ago.

Presented in Part I of this volume are papers of invited speakers Lou Herman and Irene Pepperberg, and the prize-winning paper of Kara VanDam.

Presented in Part II are twenty-seven papers accepted for publication in the proceedings, which underwent a rigorous selection process. This began with the LACUS Review Board vetting abstracts for the conference and continued with anonymous reviews and author revisions based on conference discussions and reviewer suggestions.

In the tradition of LACUS, these papers represent a diverse range of linguistic topics. And in the tradition of LACUS, they represent a variety of imaginative perspectives on the conference theme. Reporting on voices that speak from the grave, straight from the horse's mouth, or across galaxies, and describing the language of caterpillars, birds, dolphins, and other mammals, these papers explore the wonder of language that LACUS celebrates.

The volume is dedicated to David Lockwood, who was present at the very first LACUS meeting in 1974. Sadly, David passed away shortly after attending LACUS 34.

Profuse thanks are due to editors Patricia Casey Sutcliffe, Lois Stanford, and Arle Lommel, for all of their hard work in compiling this volume. Arle completed the final stage of preparation, and for taking responsibility for the end product, special thanks are due. Thanks also to Toby Griffen, LACUS Publications Director, and to the sixteen LACUS reviewers who helped authors—often greatly—and ensured the quality of the conference and of this volume.

LACUS is also grateful to EKU and the community of Richmond for their warm hospitality and generous support. We gratefully acknowledge the donated services and financial support of EKU's College of Arts & Sciences, Department of English & Theatre, Office of International Education, Teaching & Learning Center, EKU Libraries, the City of Richmond, and the Madison County Fair Board.

Finally, as the conference host I was assisted in many ways by EKU Web Director Ron Yoder and other local volunteers. Conference Chair Doug Coleman took care of numerous details of conference planning. On the ground, LACUS friends Connie Eble and Charles Lewis, Toby Griffen, and Lilly Chen were an enormous help, while Bill and Mary Sullivan arrived in Richmond several days early for the sole purpose of helping out. My gratefulness is beyond words.

-Sarah Tsiang
Local Host and Coordinator
LACUS Forum 34

I



FEATURED
LECTURES



CAN DOLPHINS UNDERSTAND LANGUAGE?

LOUIS M. HERMAN

University of Hawaii and The Dolphin Institute

THE ISSUE OF LINGUISTIC COMPETENCIES OF ANIMALS¹ has implications not only for the understanding of human language and its evolution (see e.g., different and competing views in Hauser, Chomsky & Fitch 2002, Jackendoff & Pinker 2005, Lieberman 2006), but also for its relevance to the larger issue of the uniqueness of the human mind relative to that of nonhuman animals. The latter issue subsumes language as just one facet of a human mind that, unlike that of the nonhuman animal, is seen by some as uniquely capable of reasoning systematically and productively about higher-order relations (e.g., Penn, Holyoak & Povinelli 2008).

It is within the context of these diverse views and challenges that the study of cognitive processes in animals and animal competencies for learning forms of communication that have language-like properties take on special meaning and value. As Philip Lieberman has stated, “the nature and evolution of the biological basis of language can ultimately be ascertained only by actually studying the cognitive, linguistic, and communicative behavior of human beings and the other animals to whom we are all related (Lieberman 1984: 333).” The developing body of work on animal cognition indeed testifies to the depth and breadth of cognitive skills that may be demonstrated in many large-brained mammals, not only the close relatives of humans, the great apes, but also in the evolutionarily divergent but large brained bottlenose dolphin (*Tursiops truncatus*) and several other cetacean species. Within this work, the ability of animals to learn some defining properties of language has been a subject of intense study.

The early work on teaching language-like systems to apes (Gardner & Gardner 1969, Premack 1971, Rumbaugh 1977) seemed to provide a genuine link between human and ape in fundamental language competency (see reviews in Herman 1987, Ristau & Robbins 1979). This early work reported that common chimpanzees (*Pan troglodytes*) were able to learn to understand and use not only individual words but also words strung together into sentences. This claim was largely dismissed by additional studies or criticisms of others arguing that the putative “sentences” produced by the apes were largely an artifact of context, imitation, or social cueing, or were explainable more parsimoniously by simpler mechanisms (e.g., Terrace *et al.* 1979, Ristau & Robbins 1979). Further, although sequences

¹ I thank the scores of students, interns, and volunteers who assisted in these studies over the years, and particularly those four dolphins, Akeakamai, Phoenix, Hiapo, and Elele, now deceased, whose contributions to our understanding and appreciation of their species’ cognitive characteristics will remain their legacy. Portions of this work were supported by grants from the National Science Foundation, the Office of Naval Research, the Earthwatch Foundation, and the Dolphin Institute.

of symbols were indeed produced by the apes, the sequences often had no syntactic structure that enhanced, explained, or modified meaning.

Historically, this work with apes was focused primarily on language production and paid scant attention to language comprehension. Investigators attempted to teach the apes to produce requests or to make statements through learned gestures, or by the pressing of keyboard symbols or by use of other types of artificial symbols, assuming that if the ape produced a gesture or other learned symbol, or a sequence of such productions, that it understood what it was communicating—that it understood what the word or sequence meant or represented. A further assumption was that the ape would understand those same words or sequences when produced by the human partner. These assumptions, when later tested, proved largely false. It was found, instead, that comprehension did not flow automatically from production. The preeminence of language comprehension over language production, only relatively recently appreciated by ape language researchers (see e.g., Herman & Morrel-Samuels 1990), has long been appreciated among those studying child language (e.g., Bloom 1974).

More recent language work with bonobo chimpanzees (*Pan paniscus*), pioneered by Sue Savage-Rumbaugh (e.g., Savage-Rumbaugh *et al.* 1993), emphasized language comprehension and has progressed well beyond the findings from the earlier ape language studies. The bonobos have shown an ability to learn to understand instructions given in spoken English sentences, with at least a rudimentary appreciation that sentence structure affects meaning. Further, Savage-Rumbaugh has shown that both common and bonobo chimpanzees can learn to appreciate that symbols (words) of the language can function as linguistic references to objects and actions. This understanding that words *refer* is one of the key characteristics of human language.

In the remainder of this paper, I summarize our findings on linguistic skills in bottlenosed dolphins and on some related cognitive abilities.

1. SHORT PRIMER ON DOLPHIN BIOLOGY AND NATURAL HISTORY. Inasmuch as the readers in this journal may have had only limited exposure to the biology and natural history of bottlenose dolphins, a short primer may prove useful.

The bottlenose dolphin is a *cetacean* belonging to the suborder of toothed whales, comprised of six or more families, depending on the particular taxonomist. The largest family is the Delphinidae (dolphins) numbering about 32 species. Besides the bottlenose dolphin, examples of some other dolphin species are the killer whale (the largest member of the dolphin family), the pilot whale, spinner dolphin, and common dolphin. Modern dolphins emerged only about ~5–12 million years ago.

Bottlenose dolphins are a cosmopolitan species, widely distributed throughout the temperate and tropical seas worldwide. They are exquisitely adapted to the marine world, anatomically, physiologically, behaviorally, and socially. Their adaptations include extensive sensory specializations and vocal flexibility. Their eyes are laterally placed, giving them a panoramic field of view, without sacrificing depth perception. They can see laterally, forward, and rearward, and they have good visual acuity in both water and in air (Herman *et al.* 1975). Their echolocation sense enables them to inspect their environment even in

the darkness of the deep waters or at night, through listening to and analyzing the echoes returning from their emitted clicks (Au 1993). In addition to these broadband, very short duration echolocation clicks, dolphins also produce broadband burst-pulse sounds that convey their emotional state, such as slow “pleasure” clicks and strident “annoyance” sounds (Herman & Tavolga 1980). Finally, narrow-band frequency varying whistles are apparently used in inter-animal communication, to identify individual animals by the unique pattern of their most common whistle and to maintain contact though dispersed.

Bottlenose dolphins live in intricate “fission-fusion” societies (Connor *et al.* 2000). They associate in small groups within this larger society, but group membership is often fluid, yet preferential. Females associate primarily with other females and their young and juveniles, while males leave their natal group as subadults. Pairs of males may form close collaborative and enduring alliances. In one of the most well studied areas, Shark Bay in Western Australia, male alliances may be used to capture and control lone females (Connor, Smolker & Bejder 2006). At times, two alliances of two or three animals may join temporarily to take away a female being guarded by a pair of males. Furthermore, there seems to be some form of memory of who helped whom, with possible reciprocity occurring later.

Developmentally, bottlenose young nurse up to ages 3–5, and enjoy a protracted period of development, care, and socialization, during which there is much opportunity to learn about the intricacies of their society, the habitat, the predators, the prey, and more. Although there is a high degree of infant and juvenile mortality, individuals who survive may live into their 40s or even 50s.

Dolphins exhibit great flexibility of behavior, illustrated, for example, by their diverse and inventive feeding strategies (Connor *et al.* 2000). In Shark Bay, for example, there is a small subgroup that uses tools to forage—they carry sponges on their beaks to aid in their foraging along the rocky bottom, protecting their beaks from becoming abraded. Along the shores of South Carolina, four or more dolphins may collaborate in herding fish, driving them onto a sloping muddy bank, and then sliding out in unison to capture the prey flopping about on the bank. In the sandy bottom of Bahamian waters, dolphins, using their echolocation, detect fish buried in the sand and then root them out, corkscrewing into the sand, driving them out, and then quickly capturing them.

2. MOTIVATIONS FOR STUDYING DOLPHIN INTELLECT. The intense interest in bottlenose dolphin intelligence over the years has been largely driven by the exceptionally large size and complexity of their brain (Hof, Chanis & Marino 2005). In absolute size, the bottlenose dolphin brain is larger and heavier than the human adult brain, about 1500–1700 grams compared with about 1200–1400 grams for the human (**Figure 1**, top, overleaf). In addition, the cortex of the dolphin brain has more convolutions than the human brain, giving it a greater surface area relative to the whole brain than occurs in the human. However, the dolphin cortex is thinner than the human cortex, so that the volume of the cortex relative to the whole brain is greater in the human. Moreover, inasmuch as larger animals tend to have larger brains, in part to account for the increased somatic tissue to control, a more satisfactory measure of brain size is its weight relative to the weight of the body. The measure of relative brain size most often used is the encephalization quotient (*EQ*), developed

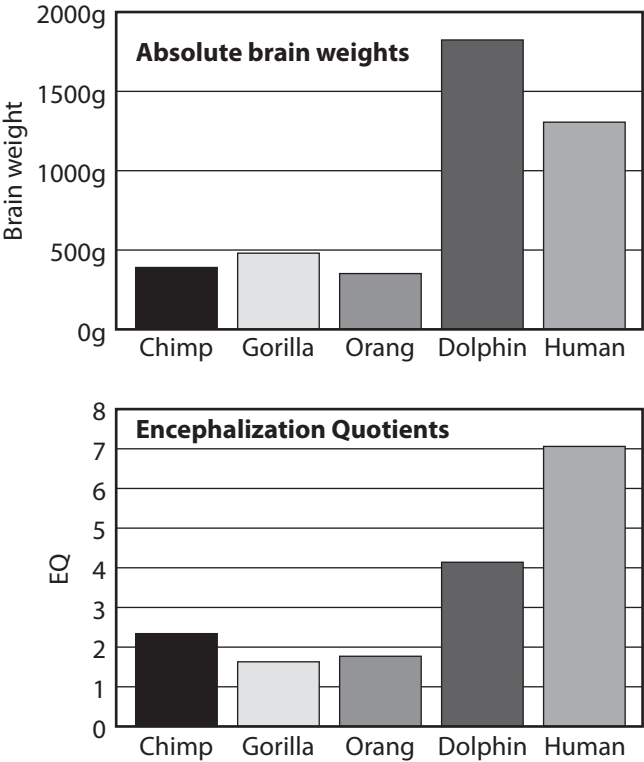


Figure 1. Absolute brain weights (top) and encephalization quotients (bottom) of chimpanzees, gorilla, orangutans, dolphins, and humans.

by Harry Jerison (1973), and defined as the degree to which brain weight departs from that expected for a given body weight, based on the regression of brain weight on body weight for a wide range of mammals. The regression equation is given as:

$$EQ = \text{brain wt} / 0.12(\text{body wt})^{0.67}$$

Values lying on the regression line have an EQ of 1.0; those lying above have an EQ greater than 1.0 and those lying below have an EQ less than 1.0. Applying this metric, humans have an EQ of about 7.0; that is, humans are about seven times more encephalized (seven times more excess brain tissue) than would be expected given our average body weight (**Figure 1**, bottom). Bottlenose dolphins, and several other dolphin species similarly sized to the bottlenose, have an EQ of about four, second only to the human and well the above the EQs of about 2.0 for the great apes (chimpanzees, gorillas, and orangutans) (Marino 1998). Relative brain size may suggest intelligence, but in the final analysis it is behavior and not structure that must ultimately measure the intellectual breadth and depth of the species.

Thus, the relative size of the dolphin brain, coupled with the complexity of their society, motivates formal study of their intellect—and their potential for any linguistic competency. Although there is no evidence that dolphins in the wild have anything approaching a human natural language, it is still of interest to ask whether they may be capable of acquiring, through tutoring, some of the fundamental defining attributes of a human language—particularly the semantic and syntactic components. More broadly, beyond language, dolphin intellect is of fundamental and comparative interest and importance because of the numerous similarities noted in cognitive abilities and traits of dolphin and ape—and this despite the immense divergences of these two groups in their evolution, general biology, brain architecture, and ecology. This drives the question of whether there may be some pressures in common to these divergent groups that might select for intellect, and if so, what this might inform about the emergence of human intellect.

3. KEWALO BASIN STUDIES OF DOLPHIN LINGUISTIC AND COGNITIVE SKILLS. Our dolphin studies were carried out at the Kewalo Basin Marine Mammal Laboratory in Honolulu with the dolphins Akeakamai (“Ake”), Phoenix, Hiapo and Elele. All were wild born Atlantic bottlenose dolphins from the Gulf of Mexico, and all arrived at our laboratory at about the age of two or three. Ake and Phoenix, both females, arrived together in 1978 and Hiapo, a male, and Elele, a female, arrived together in 1987.

The philosophy that guided our work on cognitive and linguistic skills of these dolphins was that the full flower of intellect is best revealed through immersion in a program of long-term intensive education within a culture that values education. Inasmuch as this seems to be the conditions under which the full flower of human intellect emerges, why should that not be the case as well for other long-lived large-brained animals? To this end, we used an educational progression with our dolphins in which they began their education at about 2–3 years of age, starting with simple tasks and then progressing gradually to tasks and challenges of increased complexity. Through this process, the dolphins accrued knowledge, and learned rules, concepts and strategies. They learned how their laboratory world worked and were then able to demonstrate cognitive skills that might not have been realized otherwise.

3.1. SENTENCE UNDERSTANDING. Our initial work began with Ake and Phoenix shortly after their arrival and asked, “Can a dolphin *understand* a sentence? This was an obvious reference to the work of Terrace *et al.* (1979) that asked, “Can an ape *create* a sentence?” Thus, unlike the chimp work, including that of Terrace *et al.*, we chose to focus on language comprehension, rather than language production. The emphasis of the ape work on production introduced a great deal of subjectivity into the studies, as the researchers attempted to interpret the productions of the apes. In contrast, our emphasis on comprehension allowed for objectivity in analysis and interpretation. The dolphins were given instructions through the language systems to take an indicated action to an indicated object or to construct one or another relationship between two objects. We measured comprehension by the accuracy with which the instructions were carried out, particularly new or novel instructions. The dolphins’ responses were described in real time by an observer blind and deaf to what

Non-relational		
1.	Object + Action	<i>Surfboard Over</i>
2.	Modifier + Object + Action	<i>Left Hoop Through</i> <i>Right Water Tail-Touch</i>
Relational		
3.	Object1 + Object2 + Relational Term (R)	<i>Person Ball Fetch</i> <i>Ball Person Fetch</i>
4.	Modifier + Object1 + Object2 + R	<i>Right Pipe Frisbee Fetch</i>
5.	Object1 + Modifier + Object2 + R	<i>Phoenix Left Net Fetch</i>
6.	Modifier + Object1 + Modifier + Object2 + R	<i>Left Basket Right Ball In</i> <i>Right Basket Left Ball In</i> <i>Right Basket Right Ball In</i> <i>etc.</i>

Table 1. Ake's sentence frames and examples of instructions.

instruction was given. If the observer's labeling of the response completely matched the instruction given, the dolphin was scored as correct and was rewarded with fish and social praise. A complete description of the languages, the various tests given, the controls used, and the responses of the dolphins are available elsewhere (Herman 1986, 1987; Herman, Pack & Morrel-Samuels 1993; Herman, Richards & Wolz 1984). Here, I summarize some of the key points.

We developed two different language formats: an acoustic language for Phoenix and a gestural language for Ake. Inasmuch as the bulk of our work was done with the gestural language, I will focus on that. Description of the work with Phoenix in the acoustic language can be found within the references just cited.

As shown in **Table 1**, there were two general sentence forms: nonrelational and relational, expressed within the six sentence frames shown in the table. The two- and three-word non-relational sentences required that the dolphin take a specified action to a specified object. An optional locative modifier (*left* or *right*) was used before the object name in the three-word frame. For example, the gestural instruction *Surfboard Over* directed Ake to jump over the surfboard, while *Left Surfboard Over* directed her to jump over the surfboard to her left (and not the one to her right). Multiple named objects were always present in the tank during formal testing, with one or two of the objects positioned as left and right pairs (relative to the dolphin's location).

We used an inverse grammar for the relational sentences. As shown in the following example, in the inverse grammar the symbol sequence does not flow in the same order as the required response sequence. For example, consider the instruction *person ball fetch* asking Ake to take a ball (floating in the water) to a person (also in the water, or standing at tankside). The instruction and the required response are expressed as shown in **Figure 2**.

The inverse grammar does not allow for word-by-word processing—that is, taking an action to each word as it occurs—but requires *sentence* processing, our prime interest. Ake cannot interpret the instruction (the required actions) until the entire sequence

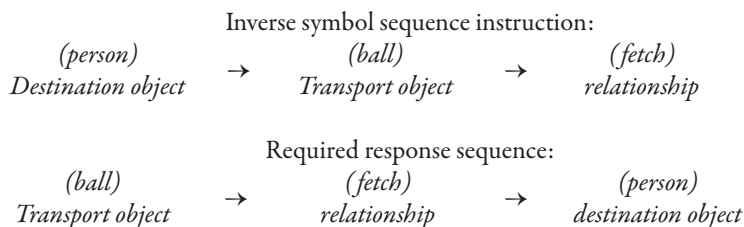


Figure 2. Instruction and required response for person fetch ball.

has occurred. Thus, the first word alone, *person*, does not inform as to its function, which might be as a direct object, as in the sentence *person under*, or as an indirect object, as in the relational illustration above. Similarly, the second word, *ball*, does not predict the exact instruction inasmuch as there are alternate endings (third words) including *in*, *fetch*, and *erase* (*erase* means ‘cancel’ or ‘disregard the preceding’). Therefore, all words must be processed and interpreted before Ake can organize the correct response. The relational sequence allows for some semantic contrasts, in which a reversal of object names requires a reversal of action. Thus, *person ball fetch* requires Ake to take the ball to the person, while *ball person fetch* requires that she take the person to the ball.

Ake’s language allowed for four- and five-word-long sentences, as shown in **Table 1**, Frames 4–6, by incorporating locatives before one or both object names. These longer sentences were a concatenation of the two three-word forms shown in **Table 1**, Frames 2 and 3, and were not explicitly taught. Instead, Ake correctly inferred their interpretation the *first* time she was given four- and five-word sequences. These longer sequences also allowed for semantic contrasts, by reversing object order as illustrated earlier, or by changing locative order, or both. For example, the sentence *Right Basket Left Frisbee In* instructs Ake to put the Frisbee on her left in the basket on her right, while *Left Basket Right Frisbee In* requires the opposite. Ake understood these differences well, taking account of both gesture meaning (the semantic component) and sequences of gestures (the syntactic component) to interpret her instructions correctly. Of 75 2- and 3-word novel *nonrelational* sentences given, Ake responded wholly correctly to 53 (71%), and of 139 3-, 4-, and 5-word novel relational sentences given, Ake responded wholly correctly to 86 (62%). Each sentence was a novel instruction; that is, she had never received that instruction previously. A strict scoring criterion was used: the instruction must be performed entirely correctly in order for Ake’s response to be scored as correct. For example, if she put the left ball in the left basket instead of the right basket, that would be scored as an error, even though, overall, the instruction was understood semantically and syntactically.

3.2. GRAMMATICAL UNDERSTANDING: INTERPRETING ANOMALOUS SEQUENCES. Ake had a deep understanding of the grammar of her language, as illustrated by her *rational* responses to anomalous sequences (Herman, Kuczaj & Holder 1993; Holder, Herman & Kuczaj 1993; also see Herman & Ueyeyama 1999). We tested her responses to both semantic and syntactic anomalies. A *semantic anomaly* violated a semantic rule or relationship.

Anomaly	N	Reject	Substitute	Extract	Reverse	Non sequitur
Semantic	18	13	4	0	0	1
Syntactic	37	6	7	24	0	0

Table 2. Responses to anomalous semantic and syntactic sequences.

Examples are the two- item sequence *Surfboard Through*, an obvious impossibility, and the three-item sequence *Hoop Phoenix Fetch*, a request to transport the dolphin Phoenix to the floating hoop, but Phoenix cannot or will not be transported. Possible responses to semantic anomalies are to reject the instruction, or reverse it where possible (i.e., bring the hoop to Phoenix) or create a substitution response (e.g., *Hoop Pipe Fetch*). **Table 2** shows Ake's responses to 18 semantic anomalies. She rejected 13 (72%) outright, briefly beginning a slight orienting movement on seeing the first gesture, but then immediately facing the trainer again, and taking no further action. On four (22%) occasions she created a substitution response by transporting a movable object instead of the immovable object signified, and on one occasion she responded in a way that had no bearing on the original instruction (non sequitur). She never reversed the sequence, however, illustrating the strong control of word order on her interpretation of instructions.

Syntactic anomalies violated a syntactic rule or relationship. Examples are *Speaker Surfboard Basket Fetch* and *Water Phoenix Ball On* (note that *Speaker*, attached to the tank wall, *Water*, streaming from a suspended hose, and *Phoenix* are nontransportable objects, while *Surfboard*, *Basket*, and *Ball* are transportable). As a whole, each sequence is syntactically anomalous in that there is no syntactic rule allowing for three object names in a row. However, embedded in each sequence are subsets of three items that together could form legitimate semantic and syntactic relations. For example, in the first example all of the following are legitimate three-item subsets (grammatically correct and capable of being carried out): *Speaker Surfboard Fetch*, *Speaker Basket Fetch*, and *Surfboard Basket Fetch*. **Table 2** shows that in 24 (65%) of 37 syntactic anomalies given Ake, she extracted a grammatical subset and responded to that, for example transporting the basket to the speaker in the first sequence illustrated, and in doing so, conjoining nonadjacent items to complete the extracted subset. On six occasions, she rejected the entire anomaly, and on seven occasions created a substitute response. As a whole then, Ake's responses to the anomalies reveal a deep understanding of the grammar of the tutored language. Importantly, no reinforcement or tutoring was given for Ake's responses to anomalies. Instead, anomalies were inserted at a very low density within a larger set of grammatical sequences given to her (e.g., two anomalous sequences occurred at random locations within a larger set of 17 normal sequences of various types, no more than once per day, over a six week period). After Ake had responded to the sequence, the trainer simply waited for her to return on her own to the testing station.

3.3. UNDERSTANDING REPRESENTATIONS OF REALITY. Television can represent the real world, yet in general animals have difficulty in interpreting these scenes representationally. Savage-Rumbaugh (1986) reported, for example, that even her language trained

chimpanzees, Sherman and Austin, had difficulty interpreting television scenes; they did not respond as if they understood what was happening on the television screen. Extensive periods of social facilitation, covering many months, with trainers responding enthusiastically to the scenes while watching television together with the chimps, finally resulted in the chimps exhibiting behaviors indicating they recognized what was occurring on the screen. In sharp contrast, Ake, on the *first* occasion she was exposed to television of any sort, immediately responded to an image of a trainer gesturing to her in her familiar language format, and carried out the instructions being conveyed as accurately as she did in the real world. The small 13-inch television screen we used in our first studies was viewed by Ake through an underwater window. Later, we were able to show that Ake not only understood literal representations of humans, but also “disembodied” humans whose torso and head were blocked out so that only their arms and hands were visible on the screen. These results are fully described in Herman, Morrel-Samuels and Pack (1990) and attest to the dolphin’s ability for inferring relations between the represented world and the real world.

3.4. UNDERSTANDING THAT SYMBOLS HAVE REFERENCE. Were the gestural signs we used for objects in Ake’s tutored language understood by her as references to those objects? A strong indicant that a symbol refers, i.e., elicits the concept or the properties of an object, is an understanding of a symbolic reference to the *absent* object. To test for this indicant, we developed a procedure in which we “seeded” the tank with several objects, each shown to the dolphin and then thrown into the tank. Then, using a newly taught gesture we glossed as *Question*, we created a new sentence frame *Object + Question*. For example, *Pipe Question*, asked, “Is there a pipe in your tank?” Ake could answer *Yes* by pressing a paddle to her right, or *No* by pressing a paddle to her left (Herman & Forestell 1985). Generally, two or three objects would be thrown into her tank and then a series of questions were asked, some answerable *Yes* and some answerable *No*. Overall, Ake was approximately as accurate (~90%) at reporting absence of an object as she was at reporting presence. This gave evidence that the gestural symbols we used for objects represented those objects to Ake. In further tests, we probed her responses to 3-word relational instructions, *O₁ + O₂ + R*, where either both objects were present, or one of the other was absent. Our first probe was a case where *O₁*, the destination object, was missing. We expected that Ake would simply press the *No* paddle to indicate that the relationship could not be constructed. To our surprise and initial puzzlement, she swam to *O₂*, the transport object that was present, and carried it to the *No* paddle, in effect reporting that *O₂* was present but *O₁* was absent. In contrast, if *O₂* were absent and *O₁* present, she simply pressed the *No* paddle directly, indicating that there was no object to transport. Finally, if both objects were present, then Ake completed the relation, taking *O₂* to *O₁*, or occasionally taking *O₂* to the *Yes* paddle (see Herman, Pack & Morrel-Samuels 1993 for a more complete description of these studies).

3.5. UNDERSTANDING INDICATIVE GESTURES. Human pointing refers another to an object or event of interest (“referential pointing”) and typically seeks to share that attention with another. Few animals are capable of understanding the human pointing gesture. Dogs, which have co-evolved with humans, have undoubtedly been selected over the eons

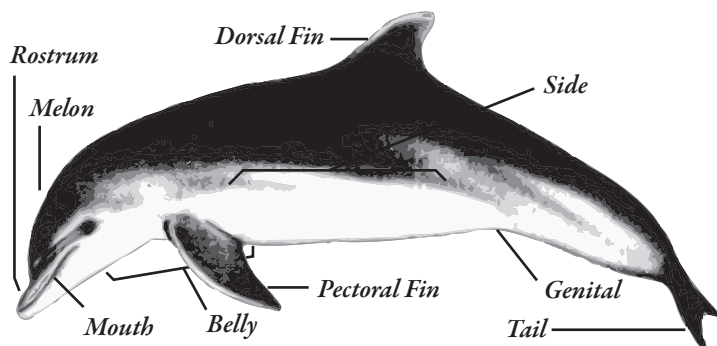


Figure 3. The body parts of the bottlenose dolphin having gestural names.

for their attention to humans and are excellent at interpreting human pointing gestures as references to distal objects. Chimpanzees, on the other hand, are notoriously poor at that task. During informal activities with the dolphins, we routinely used pointing gestures to refer a dolphin to some object we wished it to bring to us, and the dolphins readily complied. We asked therefore to what extent dolphins might be capable of understanding referential pointing. Using Ake again as our subject we constructed an experiment in which three named objects from her language paradigm were arrayed about her, one 10 ft to her left, a second 10 ft to her right, and a third 10 ft behind her (Herman *et al.* 1999). We could then point at an object and follow that with a symbolic action gesture from her language, asking her to take the indicated action to the object pointed to. Note that this sequence, Point + Action, or $P + A$, follows the same syntax as the previously described $O + A$ nonrelational term. Ake had no problem with this form. We then tested her responses to a sequence of relational points, $P_1 + P_2 + R$, again following syntactically the previous familiar relational form $O_1 + O_2 + R$, embedding the pointing sequences at low density within sequences of the simpler nonrelational forms. Ake responded by spontaneously incorporating the inverse grammar used with the wholly symbolic forms into the indicative form, by taking the object pointed to *second* to the object pointed to *first*. We speculated that the ability of the dolphin to follow the human pointing gesture might be a derivative of the structure of their echolocation behavior in which both the dolphin's body and the echolocation beam are "pointed" toward the target being inspected. Moreover, nearby dolphins "eavesdropping" on the echolocating dolphin can identify the target being inspected, seemingly jointly attending to where and to what the echolocator is "pointing" (Xitco & Roitblat 1996).

3.6. UNDERSTANDING SENTENCE FRAMES INVOLVING BODY PARTS: EXAMINING SELF-AWARENESS. We asked whether the dolphin Elele might understand symbolic gestural references to her own body parts, as shown in **Figure 3**, and how to use those parts in novel ways, as directed by other symbols. Elele was already familiar with the gestural names for *rostrum* and *tail*, but the remaining gestural names were specially taught for this new study (Herman *et al.* 2001). We then constructed four new sentence frames, as shown in **Table 3**. Elele, like

<i>Body-part + display</i>
<i>Body-part + shake</i>
<i>Object + body-part + touch</i>
<i>Object + body-part + toss</i>

Table 3. Sentence frames using body part names.

Ake, was familiar with the gestural names for the actions listed. We then carried out a formal study of her ability to understand instructions given within those sentence frames.

For example, *Frisbee, dorsal fin, touch* asked Elele to swim to the floating Frisbee and lay her dorsal fin on it, an action that required her to turn part way on her side and target the Frisbee with her dorsal fin while looking behind her with her wide field of vision. She executed that response perfectly, as well as many other requests that asked her to use a body part in a novel way. Her responses were scored by an observer having no knowledge of what instruction she had been given. Like Ake’s protocols, the response had to be entirely correct for Elele to be scored as correct. Under these conditions, Elele’s responses to the two-word requests averaged 76% correct and her responses to the three-word forms averaged 73% correct, both highly significant levels of performance. Thus, we can conclude that Elele displayed conscious awareness and conscious control of her body parts. The results suggest that the dolphin has a well-developed body image that revealed itself not only in this study, but also in other studies of dolphin behavioral mimicry (Herman 2002). These results also bear on the issue of *self-awareness*. Self-awareness has many dimensions and is exhibited here through the dolphin’s conscious awareness of its own body parts. That body-part awareness is controlled by specific brain areas is shown by deficits in such awareness in patients suffering damage to the left parietal area (Sirigu *et al.* 1991). Such patients, diagnosed with *autotopagnosia*, cannot locate their own body parts. If asked, “Where is your knee?” or “Point to your nose,” they do not know where those parts are. They thus have a deficiency in body image. They do not lack semantic knowledge of those body parts, however. If the examiner points to the patient’s knee and asks what that is, the patient can accurately reply that it is a knee. What they lack is topographical knowledge.

3.7. AWARENESS OF ONE’S OWN BEHAVIORS. Another form of self-awareness we investigated involves conscious memory for behaviors just performed and the use of that memory to self-select a subsequent behavior. To study this process, we created two new gestures, *repeat* and *any*. The first gesture asks the dolphin to do once again the behavior it just did, while the second asks for a behavior different from the one just performed. As described in Herman (2002, see also Mercado *et al.* 1998), we created a paradigm in which we directed the dolphin Phoenix to carry out the specific action we designated, either *over*, *under*, *tail-touch*, *pectoral-fin touch*, or *mouth* (= *bite*), to a single object floating nearby in the tank. After completing the behavior and returning to the trainer, Phoenix was given either the *repeat* gesture or the *any* gesture. This was repeated three times, as in the following sequence: *Directed Behavior (Over, Under, Tail-touch, Pec-touch, or Mouth), Any or Repeat, Any or Repeat, Any or Repeat*. Phoenix understood that *Any* required her to perform any of the five behaviors other than the one she just performed. An example of an actual recorded

Sequence	Four-item sequences							
	BAAA	BAAR	BARR	BARA	BRAA	BRAR	BRRR	BRRA
% correct	80	85	80	85	70	65	95	100

Table 4. Percent of correct responses to each sequence ($n = 20$) of the dolphin Phoenix (B = directed first behavior; R = repeat behavior; A = any behavior of the five except the one just completed.)

four-item sequence given and Phoenix’s responses to each (in parentheses) was: *Directed behavior* (*Pectoral-fin touch*), *Any* (*Over*), *Repeat* (*Over*), *Any* (*Tail-touch*). Since the entire sequence was performed correctly, Phoenix was scored as correct on that trial. We examined all possible three-item permutations of *Repeat* and *Any*, with the results shown in **Table 4** for the first 20 instances of each particular permutation. Permutations were given in a balanced, quasi-random order.

To perform at the levels shown in **Table 4**, Phoenix had to retain in memory a representation of the last behavior performed and, depending on the particular gesture given, *repeat* or *any*, self-select the next behavior from among the remaining set of four, and then update her immediate memory for that new “last” behavior. Her ability to do this so well illustrates her awareness of her own recent behaviors, one of the many dimensions of self-awareness. Importantly, inasmuch as the gestures *Repeat* and *Any* were not associated with any one particular behavior, Phoenix had to rely on her memory for what she just did, rather than on a specific action directed by a trainer, as in the more familiar *O + A* sequence.

3.8. CREATIVE SYNCHRONY. We developed a gestural sign we called *create* that instructed a dolphin to perform any behavior of its choice. The behavior could be a learned behavior or one of the dolphin’s own creation. If a second *create* gesture were given after the dolphin had responded to the preceding one, the rule was that the second behavior had to be different from the first. All four dolphins, but especially Elele, were adept at creating a range of different behaviors. In one formal test (described in Herman 2006), Elele created 72 different behaviors in 144 requests to *create*. Clearly, her responses to *create* were not stereotyped. We also taught the dolphins a gestural sign that we called *tandem*. If an action sign followed the *tandem* sign, such as *tandem back-dive*, it instructed a pair of dolphins to perform that action together in tight synchrony, both in timing and in location. Later, we tested the dolphin’s responses to the novel and challenging two-element sequence *tandem create*. Here, a pair of dolphins is being asked to create their own behavior—it must be the same behavior and it must be executed together in close synchrony. Typically, in response, the pair will swim off together underwater, apparently organizing or coordinating some response. Responses may range, for example, from a simultaneous headstand with tail exposed and wiggling, to a dramatic high leap, both dolphins spinning counterclockwise on their long axis and squirting water from their mouth. In one test pairing the dolphins Elele and Hiapo, 79 different behaviors were documented in response to *tandem create* (reported in Herman 2002). We were unable to determine with certainty how such behaviors were selected and organized. The most parsimonious explanation was that it was

done though behavioral mimicry, one dolphin selecting a behavior and the other following extremely closely. Videotape analyses revealed that in many cases the dolphins appeared to be in virtual synchrony, but in 44 cases one or the other dolphin could be detected performing the act slightly ahead of the other.

3.9. MIMICRY. Imitation is a key mechanism for social learning and the spread of culture. Surprisingly, therefore, a capability for behavioral mimicry is not widespread among non-human animals. The old saw “monkey-see, monkey-do” simply does not hold up to empirical testing (Visalberghi & Fragaszy 1990). In contrast to the norm, bottlenosed dolphins are generalized mimics, capable of faithfully copying both arbitrary sounds and arbitrary motor behaviors. We demonstrated flexible *vocal* mimicry in Ake, who could copy a variety of electronically generated sounds that were broadcast into her tank through an underwater speaker (Richards, Wolz & Herman 1984). *Behavioral* mimicry was demonstrated with all four dolphins in a variety of ways and a variety of contexts (see review in Herman 2002). These included imitation of the behaviors of another dolphin, imitation of the behaviors of a human demonstrator both in-water or at tankside, and imitation of either dolphin or human behaviors viewed on a television screen behind an underwater window. The dolphins also understood the concept of *mimic*. In a formal testing of in-water mimicry of either a dolphin model or a human model, the observer dolphin only imitated if given the *mimic* gesture after observing the model's behavior. If given some other gesture, such as one meaning *spiral swim*, it would do that instead. Dolphins thus appear to be the only nonhuman animal capable of both varied vocal and behavioral mimicry, capabilities that likely derive from the adaptive function of these abilities in the wild. Thus, dolphins can imitate the “signature whistles” of another. Signature whistles are so termed because they typically are individual-specific, apparently serving as an individual identifier useful for maintaining social cohesion in a group. Motor mimicry abilities may be an extension of the natural synchrony seen among pairs or groups of dolphins in the wild, leaping together in unison, for example. The *tandem* behaviors we have demonstrated in the lab are also a likely extension of this naturally synchronous capability. In general, acting in synchrony with another is an affirmation of affiliation with the other.

4. SUMMARY AND CONCLUSIONS. The various studies reviewed have shown a wide array of domain-general linguistic and cognitive capabilities of bottlenose dolphins, as expressed through laboratory investigations.

4.1. LANGUAGE UNDERSTANDING. With respect to language-learning skills, emphasizing an understanding of instructions conveyed through an artificial gestural language system, the dolphin Ake demonstrated all of the following:

- a. Processed whole sentences (not just word-by-word processing), as demanded by the inverse grammar of the symbolic gestural artificial language system,
- b. Accounted for both the semantic and syntactic components of the grammar when interpreting the instruction given her,

- c. Carried out most novel instructions correctly on the first occasion they occurred,
- d. Correctly inferred the meaning of new four- and five-word syntactic structures on the first occasion they occurred,
- e. Understood object symbols referentially,
- f. Revealed a deep understanding of the grammar of the language system by rejecting most semantic anomalies and by extracting the grammatically correct subsets embedded within longer syntactically anomalous sequences, including conjoining nonadjacent terms when necessary or desired,
- g. Understood representations of the real world, responding correctly to gestural instructions given by trainers appearing live on a television screen the first time she viewed a television image; she could also understand immediately the gestural instructions given through decomposed images of trainers, whose head and torso were blocked out revealing only the movement of the arms and hands alone,
- h. Spontaneously applied the inverse grammar to sequences of deictic gestures that were substituted for gestural object symbols, by taking the object pointed to second to the object pointed to first.

4.2. SOCIAL COGNITION. In the social domain, the dolphins demonstrated the following:

- a. An ability to share attention with a human pointing to objects, by swimming to those objects and carrying out the accompanying gestural action instruction given by the trainer,
- b. A profound ability for social imitation of the behaviors of others. Although the vocal imitation we demonstrated in the laboratory was not in a social context, in the wild dolphins do imitate the vocalizations of each other, particularly the signature whistles; the generality of behavioral imitation was shown through the ability to copy behaviors of other dolphins and humans in the real world, and to recognize and copy behaviors displayed on a television screen,
- c. An ability to carry out highly coordinated and synchronized behaviors in tandem—two dolphins acting in the same way at the same time and place, if so instructed; tandem behavior extended even to creative acts, a pair of dolphins executing together behaviors of their own joint choice, the same behavior carried out together in space and timing in response to the instruction, *tandem create*.

4.3. SELF-KNOWLEDGE. In the domain of self-awareness or self-knowledge, the dolphins demonstrated the following:

- a. Conscious awareness of their own behaviors, repeating or not repeating behaviors on command and maintaining and updating a mental inventory of the last behavior performed in order to choose the next behavior,
- b. Conscious awareness and conscious control of their own body parts, by an understanding of gestural symbolic references to their own body parts and how to use them in novel ways as directed by further gestural instructions.

4.4. COGNITIVE CONVERGENCE AND EVOLUTION OF INTELLECT. The diversity, depth, and breadth of the linguistic and cognitive skills demonstrated by these dolphins revealed rich behavioral flexibility in these different intellectual domains. In many cases this included apparent logical inferences and innovative responding. Some of the behaviors demonstrated by the dolphins are similar to behaviors demonstrated in laboratory studies of chimpanzees. These include, but are not limited to *language comprehension*, *referential understanding of symbols*, and *motor mimicry*. Several of the dolphin capabilities illustrated were not within the capabilities of chimpanzees or have not yet been tested in that species. These include *vocal mimicry*, *the immediate interpretation of TV scenes*, *comprehension of object-directed points and point sequences*, and *an understanding of the concepts of tandem and create*.

Despite these differences, many of the similarities are striking, and suggest a convergence of cognitive abilities in these two distinct groups, separated otherwise by wide gulfs in their biology, ecology, and evolution. Yet the convergent cognitive characteristics suggest some underlying commonality in pressures selecting for intellect. Dolphins and chimpanzees in fact share some interesting societal similarities. Both are long-lived, have a protracted period of development and caregiving, and live in a fission-fusion society in which relationships among individuals are important, and dependence on integrating into the societal norms is crucial for individual benefit and survival. This suggests that

The major link that cognitively connects the otherwise evolutionary divergent delphinids and primates may be social pressure—the requirement for integration into a social order having an extensive communication matrix for promoting the well-being and survival of individuals. (Herman 1980:421)

Finally, it seems reasonable to conclude that social forces were also a likely driving force behind the evolution of intellect in humans.

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GREY PARROT VOCAL LEARNING: CREATION OF NEW LABELS FROM EXISTING VOCALIZATIONS AND ISSUES OF IMITATION

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IMITATION IS OFTEN CONSIDERED A PREREQUISITE FOR COMMUNICATION, and particularly so for interspecies communication, in the sense that the ability to reproduce signals, signs, or symbols in a given context suggests agreement about their reference between the model (in this case, various humans) and the imitator (here a Grey parrot, *Psittacus erithacus*). Nevertheless, considerable confusion exists about the term “imitation,” in and of itself, which must be clarified before any discussion of its role in communication. The first step in such clarification is to separate “imitation” from “mimicry,” the latter being the mindless, nonreferential repetition often associated with the term “parroting,” rather than the intentional, referential use of nonspecies-specific (i.e., heterospecific or allospecific) speech elements by a nonhuman. Imitation has also been defined, notably by Thorpe (1963), as the intentional copying of an otherwise improbable, novel act and, in some cases (e.g., Arbib 2005), as the integration of several familiar actions in novel ways to produce that novel act. Thus, in this paper, I review arguments that the intentional, referential reproduction of novel English vocalizations by a Grey parrot, Alex, likely represents imitative behavior, particularly when the targeted novel vocalizations are constructed from related elements already in his repertoire (i.e., segmentation); I also discuss consequences of this imitative behavior in terms of evaluating this bird’s communicative competence (Pepperberg 2007a, b). Previously, Alex had been shown to label over 50 exemplars, 7 colors, 5 shapes, quantities to 6, 3 categories (color, shape, material) and use “no,” “come here,” “wanna go X” and “want Y” (X and Y are appropriate location or item labels). He combined labels in simple ways to identify, request, comment upon, or refuse more than 100 items and alter his environment. He processed queries to judge category, relative size, quantity, presence or absence of numerical sets and similarity/difference in attributes, and to show label and number comprehension (Pepperberg 1999, 2006). He semantically separated labeling from requesting. Alex had also been trained on phonemes: He associated alphabet letters B, CH, I, K, N, OR, S, SH, T with corresponding appropriate phonological sounds (e.g., /bi/ for BI), receiving the plastic or wooden letters as his reward (Pepperberg 2007a). Alex’s abilities, advanced though they were, could not qualify him as having acquired a human language; nevertheless, I will argue that he achieved a distinctive form of interspecies communication, including imitative behavior.

Two arguments have, however, been proposed against interpreting Alex’s behavior as true imitation, which also must be addressed before any further discussion (Pepperberg 2007a, b). One argument is that avian imitation of English speech does not involve intentional, accurate reproduction of human articulatory acts. The second argument is that non-humans are incapable of segmentation.

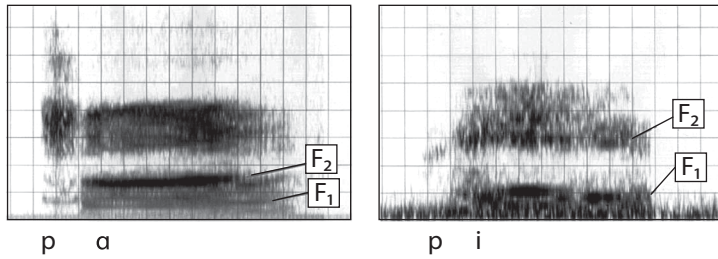


Figure 1. Alex's production of "pah" /pa/, his label for pasta and for "pea" /pi/, his label for a green pea.

The first argument has already been countered (Pepperberg 2007a, b): as described in Patterson and Pepperberg (1994, 1998), Alex's parrot anatomy prevents him from exactly reproducing human articulatory acts, but he (though maybe not all parrots) uses a two-tube system and frequency modulation as do humans, and employs his tongue, glottis, and larynx in some of the same ways used by humans to produce vowels and consonants (Warren, Patterson & Pepperberg 1996). His stops exhibit voiced/voiceless, labial, alveolar, and velar groupings; his vowels can be classified with respect to formant structures similar to those of humans, though most of his variation occurs in the second formant (see **Figure 1**). That is, his speech is not simply the result of, for example, sine wave interference as proposed by Lieberman (1984), but shows formants like those of his trainer.

Countering the second argument, by claiming that Alex is capable of vocal segmentation—a special form of vocal combinatory behavior—would imply that he recognizes that his existent labels are formed of individual morphemes or phonemes that can be combined in novel ways to create what are for the subject novel vocalizations (e.g., Greenfield 1991, Peperkamp 2003), and would also demonstrate phonological awareness (Pepperberg 2007a). Such behavior is not only considered basic to human language development (Carroll *et al.* 2003), but also a uniquely human trait: most animals, lacking speech, are never exposed to, nor trained nor tested on, issues of phonological awareness or imitation, nor are they expected to have internal representations of phonemes that would allow for such combinatorial behavior (Pepperberg 2007a). Even in children, such behavior is not considered innate: Children, for example, apparently shift from recognizing and producing words holistically (a simple form of imitation, see Studdert-Kennedy 2002, Arbib 2005) to recognizing words as being constructed via a rule-based phonology around three years of age or later (Carroll *et al.* 2003, Vihman 1996); furthermore, manipulation of individual parts of words is presumed to require development of an internal representation of phonological structure (Byrne & Liberman 1999). That is, in order to sound out—i.e., to imitate, rather than mimic—a novel label, children must segment the sound stream into discrete elements, recognize a match between those elements and elements (or close approximations) that exist in their own repertoires, and then recombine these elements in an appropriate sequence (see Gathercole & Baddeley 1990, Treiman 1995, Arbib 2005). Moreover, children's ability to focus on the sounds of words and sound elements of words rather than

solely on word meaning appears to be assisted by training in sound-letter associations (Carroll *et al.* 2003, Mann & Foy 2003). Until now, little evidence exists for any type of segmentation in animals, even a less advanced form involving combination and/or recombination of whole labels to describe novel situations. The few existent incidents—apes' "water bird" for a swan, "cry hurt food" for a radish (Fouts & Rigby 1977), dolphins' "ring-ball" during simultaneous play with two items (Reiss & McCowan 1993)—have been considered as descriptors of the entire situation rather than as specific combinations to denote one element. In this paper, I review evidence for Alex's segmentation (Pepperberg 2007a, b) and present new data confirming this ability.

1. EXPERIMENTAL DESIGN.

1.1. SUBJECTS. The study involved two Grey parrots: Alex, then 27 years old and with 26 years of human interaction and training (see Pepperberg 1999, 2007a); and Arthur, then only 4.5 years old. Although Arthur had had about 3.5 years of intense human interaction, he had the equivalent of only about a full year of communication training (i.e., he knew "tickle," "hello," a generic "want some," and two object labels; Pepperberg & Wilkes 2004). Housing is described in Pepperberg and Wilkes (2004).

1.2. TRAINING. Arthur and later Alex were trained via the standard Model/Rival (M/R) technique (Pepperberg 1981, see also Todt 1975) to produce the label "spool" in response to wooden bobbin. Briefly, this technique uses three-way social interactions among two humans and a parrot to demonstrate a vocal behavior to be learned. The parrot observes two humans interacting as they handle and speak about one or more objects. One trainer presents objects and queries the other human about these items, using expressions such as "What's here?," "What color?," giving praise and transferring the named object to the human partner as a reward for correct answers, thereby providing a one-to-one correlation between object and label. Incorrect responses are punished by scolding and by temporarily removing items from sight. Thus the second human serves both as a model for the parrot's responses and its rival for the trainer's attention, and illustrates the consequences of errors. The model must try again or talk more clearly if the response was deliberately made incorrectly or garbled; that is, the model is subject to the process of corrective feedback, which the bird observes. The parrot is also included in the interactions: it is queried and rewarded for successive approximations to correct responses and training is adjusted to its performance level. Roles of trainer and model are also interchanged, emphasizing that a questioner is sometimes a respondent and demonstrating that the procedure can effect environmental change. Role reversal also counteracts an earlier methodological problem: birds whose trainers always maintained their respective roles responded only to the human questioner (Todt 1975). With this technique, birds will respond to, interact with, and learn from any human.

2. RESULTS. Arthur's acquisition initially followed the general pattern for birds in my lab (Patterson & Pepperberg 1994, 1998; Pepperberg 2007a, b). He began with the vowel, /u/ ("ooo"), added the fairly simple consonant /l/, and then, because production of a human

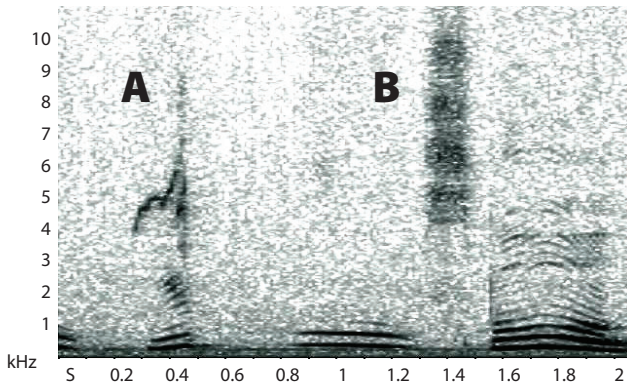


Figure 2. (a) Arthur's "spool" compared to (b) Pepperberg's "spool" (from Pepperberg 2007a).

/p/ is troublesome without lips, he had difficulty with /p/. Unlike Alex, who learned to produce /p/ apparently via esophageal speech (Patterson & Pepperberg 1998), Arthur's solution was to produce a whistled, not plosive, /p/ in /sp/ (see **Figure 2**; Pepperberg 2007a).

His behavior was similar to what Lieberman (1984:156) had predicted for parrot "speech." Specifically, Lieberman (1984) argued that birds could not reliably produce the same formant structure as humans, but rather, as noted above, produce whistles that, via interference patterns that create energy at defined frequencies, are translated by the human ear into speech-like sounds. Note, however, that only /sp/ followed the whistled pattern whereas the /u/ (which could also easily have been whistled) and /l/ clearly resembled human speech (Pepperberg 2007a), and that previous research (Patterson & Pepperberg 1994, 1998) revealed formant structure for all vowels and stop consonants (/p/, /b/, /d/, /g/, /k/, /t/) for Alex.

After observing the attention that Arthur received for labeling the wooden bobbin, Alex began to show interest in the item, and he received M/R training to produce the label. For "spool," unlike Arthur and unlike his usual form of acquisition, Alex began using a combination of existing phonemes and labels to identify the object: /s/ (unvoiced, trained in conjunction with the alphabet letter, S) and *wool*, to form "s" (pause) "wool" ("s-wool", i.e. /s-pause-wul/; see **Figure 3**; Pepperberg 2007a). The pause seemed to provide space for the absent (and difficult) /p/ (possibly as a filler phoneme, preserving the number of syllables or prosodic rhythm of the targeted vocalization; see Leonard 2001, Peters 2001). No prior labels existed in Alex's repertoire containing /sp/, nor did his repertoire include "pull" or "pool," nor any label including /ul/. He did know "paper," "peach," "parrot," "pick," etc. and "shape" and "sich" (six); thus, technically, /p/, /sh/ and /s/ but not /sp/ were available. He knew /u/ from labels such as "two" and "blue" (Pepperberg 2007a). Note that both Alex's and Pepperberg's /p/, when analyzed for VOT (voice onset time), fall solidly into the voiceless category and are distinct from the voiced /b/ (Patterson & Pepperberg 1998).

Alex retained "s-wool" for almost a year, even though usually 20–25 modeling sessions (at most several weeks of training) enable learning of a new label with existent phonemes

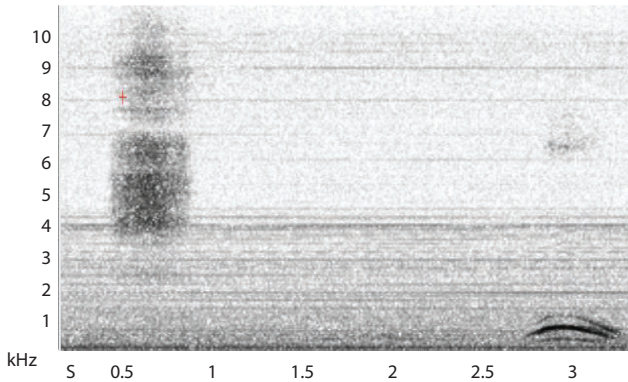


Figure 3. Alex's "s-wool" (/s-pause-wU/), (from Pepperberg 2007a).

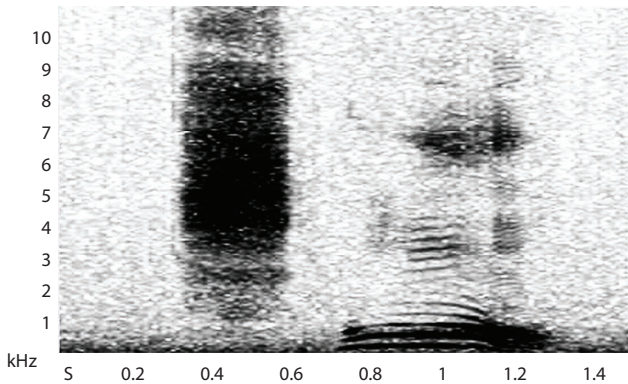


Figure 4. Alex's "spool" (/spul/) (from Pepperberg 2007a).

(Pepperberg 1999). At the end of this year-long period, he spontaneously produced a perfectly formed "spool" (/spul/). Thus, he added the /p/ where there had been a clear space and also shifted the vowel toward the appropriate /u/ sound (see **Figure 4** and **Figure 5**, overleaf, Pepperberg 2007a).

A comparison of **Figures 2** and **4** shows that Arthur's and Alex's productions differ significantly in acoustic and sonographic patterns. Alex clearly did not imitate or mimic Arthur. Arthur's utterance had a clear avian whistle-like quality; Alex's utterance sounded distinctly human. Alex's utterance clearly resembled that of Pepperberg (**Figure 2B**), even though students had performed 90% of the training. **Figure 5** (overleaf) highlights how Alex's vowel section changed from "s-wool" /U/ to "spool" /u/ to resemble that of Pepperberg.

Whether Alex's shift from /U/ to /u/ was gradual or not is unknown. Unlike a previous laboratory situation in which Alex was alone for specific periods each day to enable



Figure 5. (a) Alex's /U/; (b) Alex's /u/, (c) part of Pepperberg's /spu/ (from Pepperberg 2007a).

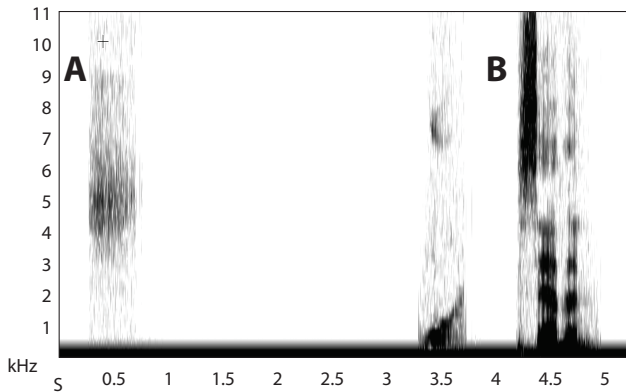


Figure 6. (a) Alex's "s-one" /s-pause-wən/ followed by (b) Pepperberg's "seven" /sEvIn/

monitoring of his solitary practice (Pepperberg, Brese, & Harris 1991), three birds (Alex, Griffin, Arthur) were now together 24/7. A gradual shift was unlikely if Alex had maintained his previous pattern of vocalizing in private: significant portions of Alex's solitary practice involved what in humans would be considered rhymes (e.g. "green, cheen, bean"; "mail, banail") in which ends of labels were stable (Pepperberg, Brese & Harris 1991); that is, he seems to have (or have acquired) categorical distinctions and minimal pairs similar to those of his human models (Patterson & Pepperberg 1994, 1998). An abrupt shift could indicate some level of self-monitoring and even some additional awareness that the appropriate vowel for "spool" derived from yet another label such as "two" (/tu/); note that such information was unavailable to Arthur.

The pattern of acquisition is not unique to "spool"; I have recently found a similar pattern for Alex for the label "seven" (first in reference to the Arabic numeral, then in reference to a set of objects). Alex's initial production of the label could best be described as "s.....n," a bracketing using the phonemes /s/ and /n/; he then quickly progressed to "s-one" (see **Figure 6**; /s/-pause-/wən/) which looked quite different from my "seven," but followed the form of "s-pause-wool".

After a period of two years, he replaced "s-one" with something sounding to the human ear like "seben," much closer to my "seven" (**Figure 7**; sonagraph expanded for reference).

3. DISCUSSION. Alex's training likely enabled him to use phonological awareness (in the sense defined in Anthony and Francis 2005) to create a difficult new label from existing bits of sounds already in his repertoire (i.e., via segmentation) and to carefully produce the

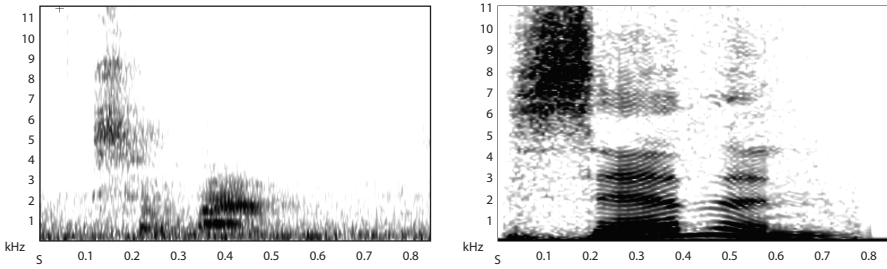


Figure 7. (a) Alex's "seben" [sɛbɪn/] compared to (b) Pepperberg's "seven" [sɛvɪn/].

appropriate phonemes; in contrast, Arthur, who lacked such training, adapted a parrot-like whistle to produce an approximation for at least part of the novel label (Pepperberg 2007a). As expected, the parrot with the most training in vocal communication demonstrated more advanced behavior—or at least closer adherence to the performance criteria established by the human models—than did the parrot with less training. Arguably, Alex's long-term exposure to Pepperberg's speech enabled him to re-create phonetic details that were unavailable to Arthur because of the latter's relatively short exposure to human models; that is, Alex, but not Arthur, could more easily compare his output against the socially-derived human benchmark (see, e.g., Port & Leary 2005, Port 2007). Nevertheless, alternative interpretations of Alex's behavior are possible, and, unfortunately, space does not permit a full discussion here. Detailed arguments and explanations can, however, be found in Pepperberg (2007a).

I now return to the initial hypothesis, that Alex's vocal segmentation provides evidence for true imitation, rather than mimicry. Mere mimicry can be defined as purposeless duplication of an act (for a bird, rote reproduction of human speech without referential content), behavior that lacks cognitive complexity and intentionality (e.g., Tomasello & Carpenter 2005). But if an act is performed because the imitator understands its purpose—to reach a goal, be it an object or intentional communication, otherwise impossible to obtain—then the act is intentional, complex, likely indicates cognitive processing, and provides evidence for true imitation. As presented above, Alex's data demonstrate that he has a functional understanding that his existent labels are comprised of individual units that can intentionally be recombined in novel ways to create referential, novel vocalizations (Pepperberg 2007a, b).

Although Alex's abilities are clearly not isomorphic with human language, my data (including previous studies, Pepperberg & Shive 2001, Pepperberg 2007a) demonstrate that elements of linguistic behavior, such as segmentation, are not limited to primates, nor are the neurological systems underlying such behavior. Although Alex seemingly generates novel meaningful labels from a finite set of elements, the rule system he demonstrated was relatively limited. Nevertheless, the data add another intriguing parallel between Alex's and young children's early label acquisition (e.g., issues of babbling, referential and fast mapping, solitary sound play; Pepperberg 1999). And, although avian neuroanatomy and its relation to the mammalian line is not yet well enough understood to determine specific

parallels among oscine, psittacine, and mammalian structures, significant progress is being made (e.g., Jarvis *et al.* 2005). Overall, despite the evolutionary distance between parrots and primates, the search for and arguments concerning responsible neural substrates and common behavior should be approached with care and not be restricted to primates (Pepperberg 2007a, b). My data, plus knowledge of avian vocal learning, of how social interaction affects such learning, and of birds' advanced cognition (e.g., Clayton *et al.* 2005, Kenward *et al.* 2005, Kroodsma & Miller 1996, Pepperberg 1999), all suggest that avian species may be important models for determining the evolutionary pressures responsible for—and in developing testable theories about—complex communication systems, particularly those involving vocal learning.

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DUTCH-AMERICAN LANGUAGE SHIFT: EVIDENCE FROM THE GRAVE

KARA VANDAM
Kaplan University

MANY RESEARCHERS HAVE NOTED THE POTENTIAL LINGUISTIC AND ETHNIC VALUE of grave markers as indicators of language prestige, shift, and death. In particular, Eva Eckert (1998) has studied dialectal changes and language shift as evidenced by Czech gravestones in Praha, Texas. Thomas Graves (1983, 1988) has done extensive work analyzing the grave inscriptions of Pennsylvania Germans. Doris Francis, Leonie Kellaher and Georgina Neophytou's 2005 work, *The Secret Cemetery*, includes as one of its arguments that ethnic cemeteries become substitute homelands for the community's members, a point that is further explored in this analysis.

This paper compares West Michigan Christian Reformed Church (hereafter CRC) Dutch graves with those of the eighteenth-century descendents of the first Dutch settlement of New Amsterdam through an analysis of the grave inscriptions of the Old Dutch Burying Ground of Sleepy Hollow in Tarrytown, New York with two West Michigan cemeteries. Particular attention is paid to the date of the inscriptions, the age of the decedents, and the rise of bilingual inscriptions, as well as the choice of language of inscription within families. Interestingly, it is not uncommon to see even a husband and wife choose—or have chosen for them, as the case may be—different languages for their gravestone inscriptions. This paper also continues a larger study by the author on language shift and bilingualism in the West Michigan CRC Dutch community, part of which appears in the *LACUS Forum* 2007 (VanDam 2007).

1. GRAVESTONE MARKERS AS PROVIDERS OF LINGUISTIC DATA. As Eva Eckert (1998:205) establishes, the inscriptions on gravestones “document both synchronic and diachronic language usage and record changes reflective of the societal patterning of language in a given community.” Typically, ritualistic language common to many tombs, such as “Rest in Peace”, is not revealing, but the style of personalized epitaphs often demonstrates dialect and language shift. Also significant is the language of life span, including the language of words like “born” and “died” as well as names of months, and the decedent's age.

The Czech language provided a useful base for Eckert's study for it is a language written with many diacritical marks, and it was the use and more significantly misuse of these marks upon which Eckert based her analysis. The settlers of the Czech community of Praha, Texas, spoke a distinct Moravian dialect but also had command of Standard Czech.¹ Gravestone inscriptions appeared both in the dialect and in Standard Czech. Certainly, some of the language on tombstones is quite formulaic and ritualistic, a point Eckert makes and

¹ Demonstrated by the very high literacy rate of 98% in the period of the late nineteenth century.

one which is important in my analysis of the Sleepy Hollow, New York, and West Michigan CRC Dutch markers. Standard language is most often found in the traditional inscriptions. But the epitaph is a “personal familiar style of unofficial communication” which reflects “the individual’s dialect shaped by usage in a community” (Eckert 1998: 207).

In such personal epitaphs, Eckert found distinct patterns of diacritical usage. Variation mirroring the native Moravian dialects of first generation immigrants appeared on their graves. For example, speakers of the Lachia dialect did not have the phonemic vowel lengthening found in Standard Czech. Lengthening is marked by the čárka diacritic (’), and so the čárka diacritic is largely absent from the first-generation Praha graves as seen in the following example. Note that vowels that would have been lengthened in Standard Czech are underlined and placed in bold type for emphasis in the Lachia dialect sample; the corresponding lengthened vowels in the Standard Czech of the second line contain the čárka diacritic:

Zde odpočívá ANTONIE KREJČÍ Povolal mne Nejvišī Pan Kde v neby...²
[cf. Standard Czech *odpočívá, KREJČÍ, Nejvyšší*]

Among second and third generation settlers, however, the diacritics with increasing frequency do not correspond to either the regional dialect or to Standard Czech. In fact, some are quite randomly placed. This led Eckert to conclude that they have come to be used solely “for decorative purposes and as ethnicity symbols” (*ibid.*: 208).

The Czech community of Praha, Texas has many similarities to the West Michigan CRC Dutch colony, but many differences as well. Czech settlers formed an “in-group community” with a shared religion; their migration began at roughly the same time (mid-nineteenth century) and ended at the end of the 1910s with the tightened immigration quotas of the 1920s. According to Eckert, the Praha, Texas, settlement maintained its linguistic heritage for a hundred years. They differed from the Dutch in their extreme geographic isolation, forming communities that were “homogenous in terms of occupation, educational background [and] social standing” (Eckert 1998:206), all characteristics that make the preservation of a native language and culture easier.

The West Michigan CRC Dutch community, in particular, was far more diverse and in greater contact with English speakers. This promoted stable bilingualism, which was part of the reason why the community was able to shift to monolingual English rapidly in the 1920s. The timing of the decline of the native language was, however, similar for the two communities, and it was tied to similar external factors. Specifically, tighter immigration laws restricted the influx of new Czech immigrants—as they did the Dutch and other immigrant groups—which had helped to keep the language and culture alive. In addition, rising anti-immigrant sentiment, and a change in the educational laws greatly reduced the freedom of local communities to dictate the language of education in their local schools.

² Note that other dialect features are present in this sample, but they are beyond the scope of the current discussion.

Thomas Graves has studied Pennsylvania German grave markers starting in the 1830s through the early twentieth century, the period of greatest linguistic change and language shift in these communities, and the same time period covered by the study of the West Michigan CRC Dutch discussed in this paper. Unlike the West Michigan CRC Dutch, the Germans of Pennsylvania faced considerable discrimination based on their ethnicity. This was a direct factor in a religious schism³ that split the conservatives, who would become the modern-day Mennonites and Amish, from the progressives—generally Lutheran and Reformed in religious affiliation, who are now indistinguishable from mainstream Americans. This split developed in the middle of the nineteenth century, sparked by state public school acts of 1834 and 1848 and further driven by the Civil War and the pressure to show patriotism through Americanism.

In his studies, Graves (1983, 1988) determined that the first English-language grave-stones began to appear in the 1830s. By the 1850s, they nearly equaled the German-language grave markers. This equilibrium was sustained until the 1880s, at which point the German-language markers quickly disappeared. Language is not the only potential indicator of ethnicity that can be placed on a grave. While the Czechs (mis)used diacritics, the Germans used motifs such as the hex (a round, geometric pattern often incorporating flowers or celestial beings) and lunette (a half-moon shape), as well as the Fraktur script,⁴ to demonstrate German ethnicity. As Graves notes, “it is through the language itself, the continued use of the Germanic text formats, and the use of the hex motifs that statements of ethnicity are made” (1983:11). And while the German language may have largely disappeared from markers in the 1880s, the hex motifs and Fraktur script persist until the 1920s.

Why did the German language disappear from the markers earlier? The disappearance corresponds with the fact that knowledge of the German language was also disappearing. A clear indication of that fact is found in what Graves refers to as “Rosetta Stones,” bilingual markers that wholly or partially translated the text of the inscription into English, or more commonly in later years into German. In some instances, the German “translation” is simply the name of the decedent in the Fraktur script. The point of this, according to Graves, was “to acknowledge the ethnic origin of the dead as well as the fact that not all the dead person’s family and friends could still read German” (1988:88).

The Pennsylvania Germans studied by Graves had much in common with the West Michigan CRC Dutch. Their immigration occurred in roughly the same period, and specifically those Germans who arrived in Pennsylvania in the latter half of the nineteenth century “felt strongly that their German culture and language should be maintained” (*ibid*). How they differed was that they had to face a greater degree of negative stereotyping and discrimination, their religious affiliations were far more diverse and, despite the desire to maintain the German language, their children followed the common pattern of language

³ Not unlike a similar schism which occurred in 1858 between the Reformed Church of America (RCA) Dutch and the CRC Dutch (VanDam 2007:499)

⁴ The Fraktur, or “broken” script, was used from the sixteenth century until World War II, and gained its name from the fact that its ornamental flourishes “broke” the continuity of linear script, such as one would find in cursive writing.

shift. By the third generation, the children were native English speakers with little knowledge of German, in contrast to the stable bilingualism of the West Michigan CRC Dutch.

Francis, Kellaher, and Neophytou (2005) consider the socio-cultural importance of cemeteries as one of the many places where people preserve ethnic identity. In particular, they posit that ethnic cemeteries have the ability to serve as surrogate “homelands” for immigrants far from their native land. This metaphorical home of origin is further strengthened by ethnic markers within the cemetery. Czech diacritical marks, use of the German Fraktur script, use of the native language in grave inscriptions, and identification of the place of birth all served to define the cemetery as being a place of safety for the in-group of the ethnic community.

2. CRC DUTCH GRAVE INSCRIPTIONS. Dutch and English are written using the same script, largely without diacritics, so the particular type of linguistic evidence uncovered by Eckert in her study of Czech graves or by Graves in the study of Pennsylvania German graves is harder to find on the gravestones of the CRC Dutch studied in the work reported here. The primary marker of ethnicity, then, is the language itself.

The amount of information contained on gravestones can vary greatly. At the simplest, they may contain only the name of the decedent, the birth year, and death year. Some add the birth day and month and death day and month to this, some the age at death. Others add a family relationship, such as “wife of” or “son of.” Location of birth or death is also at times included. The most complex graves additionally carry an epitaph or other inscription. From a linguistic standpoint, it is clear that the most valuable markers for a study of this type are those with the most information. Unfortunately, the most frequent West Michigan Dutch immigrant graves are those containing only name, birth year, and death year. Graves (1983) found the same in his study of Pennsylvania German graves from this period. This means, of course, that clues to the language of the decedent, like the common “geboren” (born) or even the names of months, is stripped away. The extant graves that do contain linguistic indicators are, however, numerous enough to form a valuable corpus for this study.

3. EIGHTEENTH CENTURY EVIDENCE FROM NEW YORK. The Old Dutch Burying Ground of Sleepy Hollow, inspiration for many of Washington Irving’s short stories as well as his final resting place, is located at the First Reformed Church in North Tarrytown, New York. The Dutch language had largely died out in New York by the time of the Revolutionary War (1775–1783), so this cemetery is significant in that it captures the language shift that occurred throughout the eighteenth century.

In the early twentieth century, struck by the rapid decay of the gravestones in the Old Dutch Burying Ground, the adjacent First Reformed Church decided to inventory its graves. Unfortunately, no graves prior to 1755 could be read due to erosion over time and the short life of the materials used to construct grave markers in the early period (often wood, as sandstone was not used until the mid-eighteenth century). Still, the inventory, published in 1953 (Perry 1953), contains the inscriptions of 942 headstones from 1755–1860, eleven of which are completely or partially in Dutch:

Memento Mori. Hier leyt ^{het} lichaem van PETRUS VAN TESSEL Geboren de 15 May 1728 Overleeden de 17 Sept. 1784 Out Zynde 56 Yaren 4 Maanden en 3 Dagen <i>Long long this stone and mould'ring clay</i> <i>Shall melt thy wife and childrens eyes.</i> <i>And to each other shall they say</i> Here a tender friend and father lies.	Mors Vincit Omnia. Ter Gedachtenis van CATRIENA ECKER wed(ue) van Petrus Van Tefsel gebo(ren) Nov ^r , 10 th 1736 Over(leeden) De 10 van Jan ^r . 1793. Ou(t Zynde) 56 Yaaren en 2 M(aanden) Who can grieve too mu(ch!) What time shall end, Our mourning for So dear a friend.
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Figure 1. *Inscriptions of the Graves of Petrus Van Tessel (1728–1784)—Old Dutch Burying Ground Reference Number (ODBGRN) N4-193(83)—and his wife, Catriena Ecker (1736–1793)—ODBGRN N4-193(84)—, the latter partially worn away.*

Sara Fouchée Enters (1717–1769)
Abraham Martlenghs (1693–1761)
Johannes Van Wert (1735–1775)
Nicholas Storm (1755–1774)
Hendrik Van Tefsel (1704–1771)
Belitie Buys (d. 1771, aged 65 yrs.)
Mino Duitcher (d. 1770, aged 60 yrs.)
Petrus Van Tessel (1728–1784)
Catriena Ecker (1736–1793)
Elizabeth Hek (d. 1767, aged 24 yrs.)
William Van Wert (d. 1772, aged 65 yrs.)

Despite the anglicized names, the grave inscriptions of Nicholas Storm and William Van Wert are completely in Dutch. Several interesting patterns can be gleaned from these graves. The list is nearly evenly divided on the basis of gender, six women and five men; eight of the eleven are over the age of fifty; only two appear after the signing of the Declaration of Independence on July 4, 1776, and no grave from 1794–1860 has any Dutch on it. The Revolutionary War caused a great rise in the sense of “Americanism” among the Dutch of New York, and these grave inscriptions reflect that fact.

Several of these graves have further interesting and individual stories to tell. Of the eleven, four belong to two married couples: Hendrick Van Tefsel and Belitie Buys, and Petrus Van Tessel and Catriena Ecker. The latter are particularly interesting as these are the two post-Revolutionary War graves and both the gravestones are trilingual: Latin, Dutch, and English. The Latin is the highly ritualized equivalent of “In memory of”, but what is truly surprising is that the remainder are not bilingual in the direction one would predict if Dutch were still their primary language, for it is the ritualistic information that is in Dutch and the epitaphs which are in English, as seen in **Figure 1**. Further, in the midst of

Hier Leid Begraven Sara Fouchee Huisvrouw Van John Enters Geboren Den. 20: October. 1717: Gestorven Den. 26 December. 1769: Verwagtende Ein Zalige OPstandinge Door Jezus Christus ten Jongsten Dage	In Memory of John Enters who died Sept ^r . 27 th , AD 1779. Aged 71 Years, 5 Months and 12 Days: Death is a debt To nature due: Which I have paid: And so muft you.
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Figure 2. *Inscriptions of the Graves of Sara Fouchee Enters (1717–1769)— ODBGRN 02-327(61)—and John Enters (1708–1779)— ODBGRN 02-327(60).*

the Dutch, English appears, as in *May* for *Mei*, 10th and *De 10 van* appearing in the same inscription, and *Jan^r*, clearly a shortened form of the English January and neither Dutch *Louwmaand* nor *Januari*.

It is interesting to note that the double “a” in “Yaaren” (years) in Catriona Ecker’s inscription is a hypercorrection. While beyond the scope of this study, an investigation of such dialectal and non-standard forms in the Dutch inscriptions presented in this paper would be valuable in its own right.

These gravestones appear close to the “decorative purposes and as ethnicity symbols” usage described by Eckert for the Czech diacritics. As for the Latin, it was not common in this cemetery at the time either. Most contemporary graves start simply with “In Memory of”. The Van Tessels came from a large family, and a review of the other family graves shows that they are in English. A search of the church’s records shows that this was an English-speaking congregation which kept its minutes in English, and that the couple served as godparents in the 1774 English-speaking baptism of their nephew. Thus, while it is possible only to speculate, the circumstantial evidence supports the conclusion that the use of Dutch seems to be simply an assertion of Dutch roots, not an indication of the couple’s daily linguistic lives.

Others on the original list also have interesting linguistic tales to tell, some put into context by examining the grave of their spouse. Of the remaining seven graves with Dutch inscriptions, four have spouses with graves in the same cemetery, and the grave markers of all four are in English. In each case, the English-inscribed spouse died later, and in each case during or after 1776. The graves of Sara Fouchee Enters (1717–1769) and her husband John Enters (1708–1779) are representative of the group. They each have lengthy inscriptions, as seen in **Figure 2**.

In conclusion, what these eleven graves demonstrate is best seen as, for most of the decedents, relic ethnic markers. When those with spouses with English graves are removed, as well as the couple with the trilingual grave, the five remaining graves are those of: Abraham Martlenghs (1693–1761), Nicolas Storm (1755–1774), Hendrick Van Tefsel (1704–1771), Belitie Buys (d. 1771, aged 65 yrs.), and William Van Wert (d. 1772, aged 65 yrs.). With the exception of Nicolas Storm, all are sixty-five years of age or older at the time of their death.

4. NINETEENTH AND TWENTIETH CENTURY EVIDENCE FROM WEST MICHIGAN. The majority of the Dutch grave markers found in West Michigan in the period from roughly 1875–1930 contain little linguistic evidence for analysis, as they are simply the decedent's name, birth year, and death year. That this style was so common makes good sense: the Dutch of Grand Rapids were proudly frugal. The larger the headstone, not only the more costly, but the more ostentatious it would appear to others—something one who is “proudly frugal” would not want. While some graves with minimal inscriptions have been included in this sample to make it more representative of the predominant type of gravestone, special attention was paid to graves with more linguistic information.

For this paper, thirty-five graves found in two cemeteries were studied: twenty-two in Oak Hill Cemetery (Grand Rapids, Michigan), and thirteen in Fulton Street Cemetery (Grand Rapids, Michigan). The graves exhibit only a few family connections: several couples, and one group of three from one family. The Oak Hill graves have death dates from 1870 to 1927 with a peak of nine graves in the years of 1897–1900; the Fulton Street graves date from 1891 to 1931.

In the Oak Hill sample, three graves can be categorized as “no language,” meaning they list just the name of decedent, birth year, and death year. Notably, the three are the earliest two (death years of 1870 and 1880) and the second-to-last one (death year of 1916). Of the remainder, fourteen are completely in Dutch, two are bilingual, and three are in English. The Dutch graves range in death years from 1896 to 1908. The English appear in 1902, 1911, and 1927. The bilingual markers appear in 1898 and 1914. Closer study reveals a pattern reflective of contemporary events and the rise and fall of “Dutch” pride.

In the early decades of the settlement, the Dutch felt no particular need to assert their “Dutchness.” It was their faith that was critical to them, and the morality they tied to that, including frugality. Only after the religious schism of 1858 (see VanDam 2007) did CRC members begin to correlate the Dutch language with an indication of the strength of their faith, for those from whom they had split, the RCA Dutch, shifted to English quickly. Further, the period from 1890–1910, roughly marked the first period where the Dutch were truly proud of their Dutchness, rather than being ambivalent about it. They were confident in it. Enough time had passed that the hard work of the colonists had paid off, and some had become community leaders. This confidence led to their taking of some political positions that ultimately undermined this self-confidence in the pre-World War I years, such as originally siding with the Boers in the Boer War in South Africa.

In these years, for the first time in the local cemeteries, Dutch surnames—such as the department store founders, the Steketees—began to grace the taller monuments perched on the high-priced cemetery hilltops. What is interesting, however, is that the markers of those who had gained wealth and success, though ostentatious, follow the simple pattern. A large, ornate family marker graced only with the family name is surrounded by smaller headstones with names, birth and death dates. It was the simpler folk who could not afford the high-perched plots, who appeared to stamp their Dutchness most firmly on their graves in this period, and of the sixteen Oak Hill graves from 1896 to 1908, fourteen are in Dutch, one is bilingual, and one is in English. Two exemplars of the Dutch stones can be found in **Figure 3** (overleaf). A complete analysis of the inscriptions is an area of the author's current research.



	
<p>REV.S.B.SEVENSMA 6 JAN.1831-6 MEI 1900 GEDENKT UWER VOORGANGEREN, DIE U HET WOORD GODS GESPOKE HEBBEN EN VOLGT HUN GELOOF NA, AANSCHOUWENDE DE UITKOMST VAN HUNNEN WANDEL HEBR. 13:7</p>	<p>JANTJE BOEREMA. Geb. Mellema Geb. 2 Maart 1839 Overl. 23 Mei 1898. Oud 59 JR. 2 Md. 21 Dg. <i>[Dutch inscription largely illegible]</i></p>

Figure 3. Graves of Reverend S.S. Sevensma (1831–1900), left, and Jantje Boerema (1839–1898), right, in Oak Hill Cemetery, Grand Rapids, Michigan. (Contrast enhanced for easier viewing.)

Just as Graves (1983, 1988) found in Pennsylvania German graves, bilingual graves begin to appear among the West Michigan Dutch in this time period. Three types of bilingual graves are characterized by the following terms:

- *Pre-carved:* English limited to words likely pre-carved on “blank” markers
- *True bilingual:* two languages present, not likely the sole result of pre-carving
- *Multi-decedent:* a single marker which identifies the resting place of two or more people; language of inscription varies by decedent.

The pre-carved and true bilingual stones could contain two languages for an economic rather than a social or cultural reason. Some headstones were pre-carved with common phrases such as “Mother,” “Father,” “Born,” “Died.” Such pre-carved headstones are referred to as “blanks” (Graves 1988). While the Dutch equivalents exist, and there are several such samples in my study, the appearance of English could indicate pre-carving.

An alternate explanation is that the decedent (or at least a family member who ordered the gravestone) had switched to English, but was reasserting Dutch roots. A third explanation is that the decedent (or family member) felt strongly Dutch but was making a gesture of acceptance of American values, which would not be culturally uncommon. All three

	
<p>MOTHER EBELTJE V. D. LEEST BORN JAN.22, 1843 DIED FEB.28, 1898 IN HOOP DAT ZYDE ZALIGE RUST IS INGEAAN</p>	<p>MOTHER JANNETJE DE JONGE MAR. 7, 1849 NOV. 26, 1914 MYN ZOON U WACHT IK O[.]</p>

Figure 4. Bilingual graves of Ebeltje van de Leest (1843–1898) and Jannetje de Jonge (1849–1914), Oak Hill, Grand Rapids, Michigan. (Contrast enhanced for easier viewing.)

explanations would account for the two bilingual markers shown in **Figure 4**, one from 1898 and one from 1914, and would be consistent with the mood of the period.

In the Fulton Street cemetery, thirteen grave markers associated with fourteen decedents (one gravestone marks the grave of a couple) were analyzed. As mentioned above, the death dates ranged from 1891 to 1931. The decedents are evenly divided with regard to sex, seven females and seven males. They range in age from infant to 82, with an average age of 44.

Looking just at the six graves in Dutch, four belong to females; two to males. Death dates range from 1898 to 1931.⁵ The decedents' average age is 60.

Five graves are clearly in English, three belong to males and two to females. Death dates range from 1891–1918. The average age of the decedents is 29, though this is somewhat misleading. Two were infants, and the remainder were 25, 49, and 59.

The Fulton Street Cemetery, unlike the Oak Hill Cemetery, was not located in a predominantly Dutch neighborhood, so it is not surprising that the sample is smaller or that English graves are found earlier. Even in the smaller set, however, the trend of the English language displacing the Dutch is clear.

⁵ The gravestone of Anna De Jonge is heavily worn, and apart from being clearly in Dutch with birth and death dates in the 1800s, is otherwise indecipherable.

In the context of the period, what conclusions can be drawn from the linguistic evidence presented through these cemeteries' graves? Dutch inscriptions peaked in the period of 1896–1900 but continued to appear regularly until World War I, at which point they disappear, only to re-emerge in two graves in the 1930s which, not coincidentally, belonged to 82 and 79 year-olds respectively. Graves with no linguistic markers at all appear in the period during which “Dutchness” was most likely to be kept hidden, from World War I through the 1930s. Bilingual inscriptions were rare—only two appear in the sample. Finally, an increase in English inscriptions is suggested. While the data do not show that increase compellingly, that is due to the sample. Dutch inscriptions on graves no longer appear by the end of the 1930s, which means all graves after that were English.

5. CONCLUSIONS. It is clear that the eighteenth-century New York Dutch used Dutch in grave inscriptions long after the language ceased to be spoken, and that the pre-Revolutionary War period was marked by a cross-societal interest in “roots”. In the post-Revolutionary War period this interest was lost, and the use of the Dutch language on graves disappeared too. In comparison, the West Michigan CRC Dutch Americans of the late nineteenth and early twentieth centuries ceased using Dutch in gravestone inscriptions as the Dutch language was lost in the 1920s. The period of the 1920s was marked by an intolerance of “hyphenated Americans”.

It can be concluded that the eighteenth-century New York Dutch used Dutch as a relic ethnic marker in the same manner as the settlers of Praha, Texas, used Czech (Eckert 1998). In contrast, the West Michigan CRC Dutch used Dutch as a practical marker and ethnic marker when they were viewed positively by their English neighbors, but abandoned both when they no longer were.

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II



SPEECH AND BEYOND



PRAGMATIC ASPECTS OF ASPECT: EVIDENCE FROM POLISH

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THIS PAPER TAKES A CLOSE LOOK at one aspectual usage, the so-called *general-factual*, where typically across Slavic, the imperfective (impf) past-tense form is used to refer to “a single action completed in the past” (Dickey 2000:96). The meaning of the general-factual is difficult to understand because the idea of expressing a completed action by means of the impf, commonly associated with the notion of incompleteness, appears contradictory. The view that in Slavic, as in all other languages, the perfective (pf) expresses complete actions and the impf (by default) denotes on-going processes and repetition follows from Comrie’s (1976) ‘universal’ definition of the perfective as “a whole viewed in its totality.” Yet the Slavic impf general-factual “does *not* denote process or repetition” (Israeli 1996:8), as manifested by the Polish examples of the usage given in (1)¹:

- (1) a. (Kiedyś) **czytałem**ⁱ tę książkę.
‘I have read that book.’ (I read it on some occasion in the past.)
b. **Mówilem**ⁱ ci, żebyś do niej zadzwonił.
‘I told you to call her’ (Didn’t I tell you to call her?)
c. Czy **otwierałeś**ⁱ okno w moim pokoju?
‘Did you open the window in my room?’ (Did you do it when I was away? The window is closed now.)

Israeli (1996:8) observes that although the problem of defining the meaning of the general-factual usage has preoccupied Russian and Slavic aspectologists ever since Mazon’s (1914) discussion of “generalized action” and Maslov’s (1959) seminal study of Bulgarian aspect (where the term *general-factual* appeared for the first time), existing analyses of the general-factual are inadequate. She proposes a discourse analysis of aspect to explain why in conversational Russian either the impf or the pf can often be used when referring to the same verbal situation in the past. In her pragmatic explanation of the general-factual usage in discourse Israeli (1996) considers two factors: the knowledge of presuppositions concerning the performance of the action shared by the conversation participants and the type of a verbal situation denoted by the verb used by the speaker².

¹ The examples in (1) represent only some types of the impf general-factual. For a list of variants distinguished within the general-factual category in Russian see Israeli (1996:9).

² In her research on aspect, Israeli (1993, 1996) considers two types of verbs: creativity/ non-creativity verbs (verbs denoting creative and non-creative acts) and communication verbs (the traditional “verbs of speaking”). Her classification appears more detailed than the Vendlerian

The impf general-factual is of paramount importance for Dickey's (2000) east-west theory because aspect variation observed in Slavic when the same general-factual situation is reported is one of the factors determining his division of the Slavic languages into the eastern (Russian) and the western (Czech) aspectual types. For example, although the impf occurs in the general-factual function in all Slavic languages, it is unacceptable in the western languages when a single achievement in the past is denoted, and a pf past-tense form has to be used.

The foregoing analysis focuses on two major types of the general-factual data in Polish: 1. the conversational discourse data where the choice of aspect is determined by pragmatic factors, and 2. the data representing those general-factual situations where aspectual choices vary in different Slavic languages. While an analysis of the use of aspect in Polish conversational discourse aims at finding out if Israeli's (1996) pragmatic contract explanation applies to Polish, a comparison of selected Polish examples of the general-factual with their counterparts in Russian and Czech will be a verification of Dickey's (2000, 2005) hypothesis that in terms of its aspectual behaviour Polish represents a transitional zone between the eastern (Russian) and the western (Czech) groups of languages.

1. THE GENERAL-FACTUAL IN DISCOURSE AND A PRAGMATIC CONTRACT. The possibility, in Slavic discourse, of using either the pf or the impf with reference to the same verbal situation, is illustrated by the Russian (Rus) and Polish (Pol) *yes-no* questions in (2), where the single, completed activity of reading a book is denoted by the impf (Rus *čitat'*; Pol *czytać*) in (2)a and by its pf counterpart (Rus *pročitat'*; Pol *przeczytać*) in (2)b³:

- (2) a. Vy **čitali**ⁱ *Vojnu i mir*? [Rus]
 'Have you (ever) read *War and Peace*?'
 Czy **czytałeś**ⁱ *Trylogię*? [Pol]
 'Have you (ever) read *The Trilogy*?'
 b. Vy **pročitali**^p *Vojnu i mir*? [Rus]
 'Did you read *War and Peace*?'
 Czy **przeczytałeś**^p *Trylogię*? [Pol]
 'Did you read *The Trilogy* (as you were supposed to)?'

While the impf forms in (2)a refer to the general experience of the listener's having read the book in question, with no reference to any particular circumstances, the pf forms in (2)b

(Vendler 1957) classification of verbal situations into: states (*know, hate*), activities (*dance, read*), accomplishments (*read a book, walk a mile*) and achievements (*notice, begin*) used by many Slavists (Dickey 2000:13), but it is not exhaustive.

³ The pf verbs for *read: pročitat'* (Rus) and *przeczytać* (Pol) have been formed by means of the perfectivizing prefixes *pro-* (Rus) and *prze-* (Pol), historically related to the prepositions meaning 'through'. The literal sense of the Polish verb *przeczytać* is 'to read through', which explains the non-pragmatic, completion interpretation of the Polish example (2)b: 'Have you read the book to the end?'. The completion reading of the corresponding example with *pročitat'* is also possible in Russian (Israeli 1996:1).

communicate a pragmatically-conditioned meaning (sometimes referred to as the “concrete-factual” meaning—Dickey 2000:95), namely, that the speaker and the listener share the presupposition that the performance of the activity of reading was expected. For example, the questions in (b) would typically be asked by a teacher who assigned the book as obligatory reading. Israeli (1996:16–17) explains the pragmatically conditioned usage of the pf in general-factual situations such as (2)b by formalizing the shared-knowledge-of-expectations condition as a “pragmatic contract between discourse participants”. The pragmatic contract means that the speaker and the hearer “share the same understanding/ presupposition that the performance of the action was expected”; if there is a contract, the speaker will use the pf, but if there is no contract or the speaker thinks that the contract has been broken, s/he will use the impf (Israeli 1996:16). Dickey (2000:21) suggests that the knowledge shared by discourse participants should also include knowledge of ‘scripts’ or ‘scenarios’ that specify the appropriate sequences of actions in the context of particular, familiar situations.⁴ Israeli’s pragmatic contract ‘rule’ is quoted below. It has to be noted that the explanation applies to a restricted group of “non-creativity verbs” defined as verbs which denote “non-creative acts”:

[T]he existence or non-existence/breaking of a pragmatic contract is the crucial factor in determining whether the pf or impf, respectively, is used *in non-creativity verbs* in both interrogative and non-interrogative sentences. (Israeli 1996:23, emphasis added)

The pragmatic contract rule explains the use of the impf in the Polish example (3)a but fails to explain why the impf is used in example (4)a. In both (3)a and (4)a, the knowledge of the presupposition that the performance of the action was expected is shared by the discourse participants: baking a cake for dessert in (3)a and shopping for food in (4)a are seen as routine activities which have to be performed daily, and the expectation that the job had to be done and that it was somebody’s turn to do it *is* part of the script knowledge shared by the speaker and the hearer. In examples (3)b and (4)b, an exclamation of the kind ‘What a (nice) surprise!’ provides context showing that the performance of the action was totally unexpected:

- (4) a. Kto (dziś) **piekł**ⁱ ciasto?
 ‘Who baked/was baking the cake (today)? (Whose turn was it to prepare desert?)’
 b. Kto **upiekł**^p ciasto? (Co za niespodzianka!)
 ‘Who has baked the cake? (What a surprise!)’
 (5) a. Kto (dziś) **robił**ⁱ zakupy?
 ‘Who did the shopping (today)?’
 b. Kto **zrobił**^p zakupy? Jaka miła niespodzianka.
 ‘Who has done the shopping? What a pleasant surprise!’

Since example (3) contains a solid creativity verb (‘bake a cake’), the non-creativity restriction to the pragmatic-contract condition allows the speaker to choose the impf in the

⁴ The term ‘scenario’ is well explained in Ungerer and Schmid (1996:140–3); a ‘script’ is “a predetermined, stereotyped sequence of actions that defines a well-known situation” (Dickey 2000:21).

situation of the shared-expectations context of (3)a while permitting the (default) occurrence of the pf in the 'unexpected event' situation of (3)b. Doing shopping (4), however, is not exactly a creative activity, so the pragmatic contract condition predicts the occurrence of the pf in the situation of (4)a where the performance of the activity was expected as part of the script specifying the involved persons' domestic obligations. Yet, the impf past-tense form verb is chosen by the speaker. What is more, the pf in (4)b is used precisely because the performance of the action was *not* expected. Other cases of apparent violation of the pragmatic contract explanation involve situations where non-creativity verbs, such as *myćⁱ/umyć^p* (*naczynia, podłogi, okna...*) 'wash (the dishes, the floors, the windows...); or *sprzątaćⁱ/posprzątać^p* 'clean (*the apartment*) express duties to be performed by the discourse participants. It would be difficult to question the shared-expectations knowledge of such duties, as is evident from the interpretation of the *who*-question in (5)a:⁵

- (5) a. Kto (dziś) **myłⁱ** naczynia?
 'Who washed/was washing the dishes (today)?' (Who performed the duty today?)
 b. Kto **umył^p** naczynia?
 'Who has washed the dishes?' (What a nice surprise!)

In (5)a, the impf refers to a routine activity whose performance is expected as the narrated event participant's duty. By contrast, the pf in (5)b signals the absence of any such expectations, emphasizing the 'unexpected, new, even creative,' aspect of the performed action.⁶

Examples (4)a and (5)a demonstrate that in the case of Polish non-creativity verbs denoting routine activities (such as non-creative domestic duties), when the expectations are shared and the identity of the person expected to perform the duty is asked about, the impf is the only aspectual possibility in the general-factual context referred to by the

⁵ The *kto* 'who'- questions in (6), which focus on the doer, could be compared to the *czy* 'whether'-information questions focused on the performance of the action, as in:

- (a) Czy **myłeś** naczynia?
 'Have you washed/ Did you wash the dishes?' (They are not exactly clean.)
 (b) Czy **umyleś** naczynia?
 'Have you washed the dishes (as I asked you to)?'

In the *czy*-questions, the pf duly indicates that a pragmatic contract, i.e. the expectation that the action was to be performed, is shared by the discourse participants; the impf indicates that either (a) the speaker is not sure whether the action of washing the dishes was performed or not (no pragmatic contract) or (b) s/he knows that the washing was to be performed (the pragmatic contract existed), but is not satisfied with the performance of the action (the contract was not fulfilled as expected and therefore can perhaps be considered as broken).

⁶ Israeli (1996:13) discusses Hamburger's (1986:172) explanation of the difference between the pf and the impf in the general-factual situations in Russian, which is based on the hypothesis that in Russian "the pf aspect is used to express the 'new' predicate whereas the impf aspect usually expresses the 'known predicate'".

question. Israeli's (1996) explanation predicting the choice of the pf in these situations fails to apply.⁷

2. INTERPRETATION OF THE GENERAL-FACTUAL USES OF THE COMMUNICATION VERB *DZWONIĆ/ZADZWONIĆ* 'PHONE'. Example (6) illustrates pragmatically conditioned uses of a subcategory of non-creative verbs, *verba dicendi* (verbs of communication). The choice of the pf *zadzwoniał* 'phone, ring up' in (6)b depends on the expectations shared by the discourse participants, and the explanation of the choice of aspect is the same as in (2)b: the pf in (6)b indicates that Ela was supposed to call, and that a pragmatic contract concerning the performance of the action existed between the speaker and the listener, i.e., both participants knew Ela was supposed to call. The impf *dzwonił* in (6)a makes no explicit reference to the existence of such a contract. Unlike (2)b, however, where the pf form is required, in the situation of (6)b, it is also possible to use the impf, in spite of the existence of a pragmatic contract, i.e., in spite of the fact that Ela's intention to call has been known to both the speaker and the hearer who thus share the knowledge of the expectation that the action was to be performed. According to Israeli's analysis, the impf in the situation (6)b would probably be interpreted as a reminder, i.e. as the instance of usage she characterizes as 'the breaking of a pragmatic contract':

[T]he speaker thinks that the contract is broken, that is *his or her interlocutor may not or does not remember the topic of the prior conversation* and the speaker reminds his interlocutor of the previous discussion. (1996:21–23, emphasis added)

My interpretation of the possible use of the impf in (6)b is that the two aspects are nearly synonymous in that context. The pf conveys the pragmatic presupposition more clearly, but the impf is also possible. This apparent 'competition of aspects' (Israeli 1996) in the situation of (6)b could perhaps be explained by the idiosyncratic nature of communication verbs (Dickey 2000). At the moment, we can only observe that the competition of aspects in the general-factual behavior of Polish communication verbs, which are for the most part non-creative, constitutes a problem for the pragmatic, shared-knowledge explanation of usage and thus requires a more in-depth analysis.⁸

⁷ One might argue that an awareness of duties to be performed does not constitute a pragmatic contract, but represents a case of 'shared cultural understandings' (Israeli 1996:19) which are expressed by the impf. The difference lies in the interpretation of the concept of duty: Does an obligation of that sort constitute a pragmatic contract or is a domestic duty merely a matter of cultural expectations?

⁸ The following Russian example of the general-factual use of the communication verb *govorit'/pogovorit'* 'talk' from Rassudova (1984:60–61), quoted in Dickey (2000:20), illustrates a discourse situation similar to that of examples (6)a and b:

(a) Vy **pogovorili** s nim?
'You spoke with him?'

- (6) a. Czy Ela **dzwoniła**ⁱ? (Kto dzisiaj dzwonił? Ciekawe czy Ela o nas pomyślała.)
 'Did Ela call?' (Who called today? Let's see if Ela has thought about us.)
 b. Czy Ela (**za**)**dzwoniła**^{p/i}? (Miała dzisiaj (za)dzwonić.)
 'Has Ela called?' (She was supposed to call today.)

Questions (6)c and (6)d would typically be asked after a minor car accident or, e.g., after a theft of a bicycle. The pf indicates that the speaker is very conscious of the fact that the event constitutes an infraction of the law and should be immediately reported to the police – this obligation is part of the accepted scenario in such cases, and the use of the pf is predicted by the shared-knowledge-of-the-script explanation. The use of the impf *dzwonić* is also possible in this situation, especially when the word *już* 'already' is present. Israeli (1996:16) explains such script-based uses of the impf with *uży* 'already' in Russian as the instance of "shared cultural expectations", which means that the discourse participants share the knowledge of the expected scenario, but no pragmatic contract defining those expectations exists. Where there is no contract, the impf of a non-creative verb like *dzwonić* 'call' can evoke shared cultural expectations, which is the case in (7)d. My impression is that the difference between (7)c (*dzwonił*^d) and (7)d (*zadzwoń*^p) lies in the degree of salience of the shared-expectations knowledge concerning the performance of the action: the expectation that a call should be made is stronger (more urgent) in the speaker's mind when s/he uses the pf.

- (6) c. Czy ktoś (już) **dzwonił**ⁱ na policję? (To nasz obowiązek.)
 'Has anyone called the police (yet)?' (It is our duty.)
 (6) d. Czy ktoś **zadzwoń**^p na policję? (Trzeba natychmiast zadzwonić.)
 'Has anybody called the police?' (One has to call immediately.)

-
- (b) Vy **govorili** s nim?
 'You spoke with him?'

According to Rassudova's interpretation, "if the speaker knows that the listener intended to do something, the pf expresses that knowledge (a), whereas the impf is appropriate if the speaker is unaware of any such intention'(b)". In Polish, either the pf *porozmawiać* or the impf *rozmawiać* can be used when the listener's intention to perform the action was known to the speaker (a). When the speaker does not know of any such intention, s/he would use the impf (b):

- (a) No i co? (**Po**)**rozmawiałeś** z szefem o podwyżce?
 'Well, did you talk to the boss about a raise?'
 (b) **Rozmawiałeś** dziś z szefem?
 'Did you talk to the boss today?'

One might again attempt to interpret the use of the impf in example (a) as a reminder (Israeli 1996:21). However, there is no indication in the sentence (nor in the context of the current situation) that the speaker actually thinks the interlocutor forgot to perform the action. The purpose of his question is not to remind the listener that he was supposed to talk to the boss, but to find out what the talk with the boss actually accomplished.

In the general-factual situation of (6)f, however, neither the pragmatic contract (Israeli 1996) nor the shared-knowledge of the script condition (Dickey 2000:21) are able to explain the speaker's choice of the pf. The use of aspect in (6)f is motivated not by the participants' shared expectations concerning the performance of the activity of calling, but by the speaker's need to express 'graphically' his/her emotions concerning the occurrence of the event.⁹ Even if we argue that in (6)f the speaker unconsciously expected (and wished for) a telephone call, the fact that somebody did actually perform the action comes to him as a surprise (indicated by the contextual clues: *Nie uwierzycie!* 'You won't believe it!' before the sentence under analysis and *Przecież nikt tu nie dzwoni* 'But nobody ever calls here' following it, which are both incompatible with the impf). Also, unconscious expectations can hardly be shared, so the shared-knowledge explanation does not really apply. The impf in (6)e has a neutral default reading indicating that the speaker had no expectations that anyone would actually call. In sum, the use of the pf aspect in the general-factual situation (6)f is not explainable in terms of Israeli's and/or Dickey's pragmatic shared-expectations condition.

(6) e. Ktoś **dzwonił** (jak nas nie było).

'Somebody called (when we were out).'

f. (Nie uwierzycie!) Ktoś do nas **zadzwo*nił***! (Przecież nikt tu nie dzwoni.)

'(You won't believe it!) Somebody has called us! (Nobody ever calls here.)'

3. THE GENERAL-FACTUAL PARAMETER AND THE ASPECTUAL DIVISION OF SLAVIC.

Dickey (2000, 2005) considers the impf general-factual one of the parameters determining a division of Slavic languages into two aspectual groups: the eastern group, with Russian as its eastern-most representative, and the western group, with Czech, as the group's leading western member. On Dickey's aspectual map of Slavic, Polish (along with Sorbian and Croatian) is placed in the so-called 'transitional zone' between the east and the west, because aspectually, it patterns sometimes like Russian and sometimes like Czech. Dickey (2000:97) observes that the aspectual picture concerning accomplishment verbs in the general-factual use across Slavic is fairly uniform: all Slavic languages can express accomplishment situations using the general-factual imperfective. In the case of achievement verbs, however, aspect usage in general-factual situations is markedly varied. Examples (7)–(9), with the Polish achievement verbs *znaleźć/znajdować* 'find' (7), *dostać/dostawać* 'receive, get' (8), and *zaprosić/zapraszać* 'invite' (9), are good illustrations of the transitional position of Polish on the aspectual map of Slavic. In the general-factual context (indicated by the time adverbials: *wczoraj* 'yesterday', *kiedys* 'on one occasion, at some point in time' and *raz* 'once') the Polish achievement verbs *znaleźć* and *dostać* must be used in the pf [(7)a, (8)a]. In that, Polish is more western (Czech)-like [(7)c, (8)c] and decidedly different from Russian, which can use the impf general-factual in the corresponding situations [(7)b, (8)b]. (The Russian and Czech examples are quoted after Dickey. They are meant to

⁹ See Dickey's (2000:89–93) discussion of the graphic, emotional use of the pf in habitual expressions.

illustrate the east-west aspect variation in *single-event general factuals*. The Polish examples are my translations of the examples discussed by Dickey).¹⁰

- (7) a. **Znalazłem^P/*znajdowałemⁱ** tę książkę wczoraj. Gdzie ona jest? [Pol]
 'I found that book yesterday. Where is it?'
 b. Ja **naxodilⁱ** ètu knigu včera, gde ona? [Rus] (Dickey 2005:5, after Štyreva 1992:176)
 c. **Našel^P/*nacházeliⁱ** jsem včera tu knihu, kde je teď? [Cz] (Dickey 2005:5)
- (8) a. Raz już **dostał^P/*dostawałⁱ** naganę za spóźnienie. [Pol]
 'He has already once received a reprimand for being late.'
 b. Odnazdy on už **polučalⁱ** vygovor za opozdanie. [Rus] (Dickey 2000:98, after Rassudova 1968:88)
 c. Jednou už **dostał^P/*dostávalⁱ** napomenutí za spoždení. [Cz] (Dickey 2000:101)

When "true" achievement verbs (Dickey 2000:103), such as *find* or *receive*, are used in a single-event general-factual context, referring to a given moment in the past, usually identified by adverbials such as (*juž*) *kiedyś/ raz (w życiu)* 'on a previous occasion/ once before/ ever before (in your life)', Polish *requires* the pf, especially when the occurrence of the action is not dependent on or associated with any other action (examples (7)a and (8)a). In that, it patterns like Czech (examples (7)b and (8)b) manifesting a general-factual aspectual behavior that is clearly different from Russian, which does allow the impf in situations (7)c and (8)c. At the same time, Polish appears to differ from Czech in the general-factual uses of the communication verb *zapraszać/zaprošić* 'invite', which also (like *znaleźć/znajdować* and *dostać/dostawać*) belongs to the category of single achievements, in the situations like (9). While, according to Dickey's data (2000:98 n. 2), Czech allows no impf in the context illustrated by (9)a, both the pf and the impf are possible in Polish in the corresponding discourse situation (9)b:

- (9) a. Musim teď odtud odejít... / Proč? Ne, ne, ne! To nedovolím. **Pozvala^P/*zvalaⁱ** jsem tě, abychom měli spolu oběd. [Cz]
 'But I have to go away from here...' / 'Why? No, no, no! I won't allow it! I invited you to have dinner with me.' (Dickey 2000:98)

¹⁰ I have tried to keep the Polish translations of Dickey's Russian and Czech examples as close to the original as possible. Some more natural examples illustrating the general-factual use of the verbs under analysis are:

- (a) Przecież wczoraj **znalazłem** w końcu te okulary. Gdzież się one znowu zapodziały?
 'But yesterday I found those glasses at last. Where have they disappeared again?'
 (b) *Kiedyś/raz już* **znalazłem** okulary w tym miejscu. Może znowu je tutaj położyłem?
 'I have already once found the glasses in this place. Perhaps I put them here again?'
 (c) Czy **dostałeś** kiedyś mandat za szybką jazdę?
 'Did you receive a speeding ticket on some previous occasion in the past?'

- (9) b. Muszę już (stąd) iść. / Ale dlaczego? Nie, nie mogę na to pozwolić! Przecież **zaprośiłam^P / zapraszałamⁱ** cię, żebyś zjadł ze mną obiad. [Pol]
 c. Kto tych ludzi tutaj **zapraszałⁱ (pozapraszałⁱ) / zaprosił^P**? [Pol]
 'Who has invited those people here?'
 d. Czy w zeszłym roku Janek **zaprośił^P / zapraszałⁱ** cię na urodziny? [Pol]
 'Did Janek invite you to his birthday party last year?'

Polish examples (9)b, c, and d with the verb *zapraszać/zaprosić* represent a true case of the competition of aspects. Both the pf and the impf are possible in the single-event general-factual situations, and the two forms appear almost synonymous (even when the possible pragmatic opposition between the masterminding [here, the initiative] in the case of the pf and the performance or the routine occurrence of the activity in the impf are taken into account). A motivation explaining the difference between the pf and the impf in these examples can perhaps be looked for in the speaker's intentions manifested in the use of aspect. The pf seems to indicate more strongly that the invitation was sincere, which means that the participants' expectations concerning the performance of the action are higher. With the impf, there is a certain sense of doubt about the performance itself or about the seriousness of the invitation. The very possibility of using both aspects in the verb *invite* with reference to a single-event general-factual achievement, however, supports Dickey's intuition that Polish is aspectually less 'western' than Czech.

4. CONCLUSION. The analysis of the Polish general-factual data confirms the view that discourse uses of aspect require a consideration of pragmatic factors. It does not confirm Israeli's (1996) discourse analysis of 'non-creativity' verbs because that group of verbs needs to be better defined and because the pragmatic-contract explanation does not apply to non-creativity Polish verbs denoting duties and obligations. Dickey's (2000, 2005) hypothesis that Polish belongs to the aspectual transition zone between the eastern and the western types in Slavic requires a consideration of a larger sample of contrastive general-factual data from Polish, Czech and Russian.

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SO YOU WANT TO COMMUNICATE WITH SPACE ALIENS? BEROM

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IN THIS PAPER I WILL LOOK AT THE PLAUSIBILITY OF SCENARIOS in which communication is first established between humans and intelligent alien species in a few examples of first-contact science fiction. Rather than taking first contact as a sub-genre as a whole, one story will be considered in detail and compared to several other cases, so that the plausibility of different scenarios can be considered in light of underlying assumptions about how aliens and humans might come to understand each other. In this sense, each scenario will be taken as a sort of thought experiment to be analyzed in terms of what is frequently called “face validity” (Hatch & Lazaraton 1991:540), a social-science term for what might be better described as commonsense plausibility. It is not my intention to present a detailed analysis of alien-alien or even human-alien communication in science fiction, to compete with Meyers (1980 *passim*). My analysis will compare the assumptions found behind each scenario against those of mainstream linguistic theory as it applies to language learning, i.e., to Chomsky’s theory of the language acquisition device (LAD) and its functional interdependence with universal grammar (UG). I will show that the face validity of a first-contact scenario does not necessarily go hand in hand with its adherence to the mainstream assumptions.

1. THE KEY ASSUMPTIONS OF CHOMSKYAN THEORY RE THE LAD AND UG. One of the key assumptions underlying mainstream linguistic theory of language acquisition is that language acquisition utilizes a different “device” in the brain from that utilized in language understanding; this assumption goes back over forty years (Chomsky 1966:26). This *assumed* separation of two separate “devices” for language learning and language understanding has been restated and emphasized over and over ever since, not only by Chomsky himself but also by many others working in general linguistic theory as well as in second language acquisition theory (for a brief review, see Coleman, 2005:203–7). Even in recent work, Chomsky has retained the assumption of a “language organ” in the brain which contains these two devices (2002:64, 82, 85–91).

A second key assumption usually made is that the input for language acquisition consists of what Chomsky (1966:26) calls the “primary linguistic data,” i.e., well-formed sentences in the target language. Coleman (2005:205) shows that this assumption—that the input does not also contain other data in parallel (other sensory input)¹—has been made

¹ Chomsky states:

Even the most extreme ‘radical behaviorist’ speculations presuppose (at least tacitly) that a child can somehow distinguish linguistic materials from the rest of the confusion around it, hence postulating the existence of FL [the faculty of language] (=LAD [the language

clear over and over, starting with Chomsky (1966 *passim*). Coleman cites Sharwood Smith, for example, who later reasserts Chomsky's assumed distinction:

It is important to distinguish input to the *comprehension system* where the listener/reader employs a whole network of linguistic and non-linguistic knowledge sources, and the input to the language acquisition, i.e., "grammar constructing" device, which will *not* be coextensive with the first type of input. (1985:402)

Implicit in this second assumption is a third: the age-old assumption that the sound waves of speech somehow contain patterns through which they carry their meaning from speaker to hearer through a hierarchical structure among the components of these patterns, i.e., that the sounds of speech can be segmented into phonemes, which in turn can be organized into morphemes, these morphemes into phrases, clauses, and so on. Yet as Yngve has shown,

The sound waves do not carry their interpretations from a speaker to a hearer as ancient theory would have it. To speak of sounds in a scientific context as carrying meanings is to invite continuing confusion and error. (1996:4)

Consider example (1) in terms of the pattern of light waves coming from the page. Now read (1) aloud and consider the pattern of sound waves coming from your mouth. Are the two patterns in any way isomorphic? Of course, they are not. The reader still not convinced that speech lacks the hierarchical patterns of morphemes and grammar should read Yngve's arguments (1996:esp. 1–13, 25–28, 32–33).

(1) The clumsy red fox stumbled over the startled dog.

2. BEROM. In John Berryman's "Berom," aliens have landed in a Kansas cornfield. The government calls in three experts: Yancey and Pratt, philologists, and Cottwold, a calligraphist. Taken to the scene of the landing, they meet the alien who greets them by saying "Berom." They are told by their escort that the alien likes to hear others say this back to him, so

acquisition device]), and as discussion of language acquisition becomes more substantive, it moves to assumptions about the language organ that are more rich and domain specific, without exception to my knowledge. (2002:85–86)

It is hard to know what to make of this. First, it is clear that Chomsky is setting up the "extreme 'radical behaviorist'" as a straw man, since there are few strict behaviorists remaining in 2002. Second, behaviorists denied the relevance of internal states of organisms, confusing these with mental states, instead using stimulus-to-response mapping functions. Third, it is clear from any broad reading of recent work in behavioral science (as opposed to behaviorism) that the assumptions Chomsky *claims* to be ubiquitous are neither universally held, nor even extremely widespread. Rather, these assumptions stake out the position held by Chomsky, Pinker, and a few others in the Chomskyan school. See, for example, Lieberman (1984:198–200) and his discussion and review of work published at about the same time Chomsky made this claim (2000:12–13, 161–64).

they respond in kind: “Berom!” The alien even produces a placard on which he writes, in neatly-formed capital letters, “BEROM.” While Cottwold manages to do little more than marvel at the serifs in the alien’s writing, Yancey attempts a guess at what language the alien is speaking (e.g., Hindustani), rejected as ridiculous by Pratt. After a while, Yancey attempts to communicate with the alien in me-Tarzan-you-Jane mode by pointing to himself and saying “Yancey,” which results in the alien gesturing to himself and saying “Gonish.” Then Yancey has an astronomer who was also brought in as a consultant draw diagrams which Yancey describes to the alien. This approach yields further success, as Yancey begins to establish a means to communicate about time and distance. Suddenly, announcing that further attempts are a waste of time, Yancey cuts off the interaction and says that he needs to go to Chicago to do some research. When he returns, Yancey explains that he has determined Gonish is using Bentley’s Commercial Code, an obsolete code for business facsimile transmissions, in his attempts to communicate with the earth people. Yancey explains that the aliens must have intercepted mid-twentieth century radioed fax transmissions far off in space and decoded them.

I have selected Berryman’s “Berom” for detailed analysis because it contains examples of three distinct approaches to learning to communicate with aliens, which I have designated (a) the closed-set Guessing Game I (or Guess the Language), (b) the closed-set Guessing Game II (or Learning with Universal Grammar), and (c) ordinary associative learning (or “Me-Tarzan-You-Jane” method).

2.1. A CLOSED-SET GUESSING GAME. When we look at how Berryman’s humans attempt to learn how to communicate with the aliens, we see that the humans begin by treating the goal as a sort of guessing game: identify the language or code being used. They argue about whether Gonish is likely to be speaking Hindustani (Berryman 1978:310).

The solution to a key problem in the *Star Trek* episode “The Paradise Syndrome” (1966)—the decoding of operating instructions on an alien asteroid defense mechanism—is managed by the character of Mr. Spock in much the same way: the form of the text is found to resemble a known writing system from another place. The inhabitants of the story locale came/were brought there at some indefinite time in the past and since have forgotten how to read the text.

In the movie, *Stargate* (1994), the problem of communicating with humans who were long ago transported to another planet by aliens is resolved in the same way. Faced with hieroglyphs that the earth protagonists believe must help explain the situation, the linguist among them realizes they are written in a dialect of ancient Egyptian.

The closed-set guessing game is a common motif in science fiction. It is not so much a device to drive plot as it is a means to minimize plot complications.²

² Similar plot-simplifying devices common in science fiction stories of first contact are telepathy and the universal translator. Telepathy, for example, appears in the *Star Trek* episode “The Devil in the Dark” (2004[1966]) in the form of what is referred to as the “Vulcan mind meld.” The universal translator was a staple of the original *Star Trek* television series, first appearing in the episode “Metamorphosis.” As Captain Kirk explains,

Although in Berryman's "Berom" the argument about whether Gonish is speaking Hindustani quickly gets pushed aside in the story line, in the end, the solution is found by adherence to this very kind of guessing-game approach. Based on a small number of examples, Yancey notes that all of Gonish's productions contain only 5-letter words (e.g., "BEROM FANID ERPOT SIDAR YEVAH") and that these are in the Roman alphabet, all in upper-case. While doing his research in Chicago, he uses these characteristics of the input to identify Gonish's method of communication as Bentley's Commercial Code. We can see here the third assumption built in, that the signal carries structure and meaning. In fact, Yancey's use of formal characteristics of the input to *identify* the target language from a closed set of search possibilities is undeniably like the process that is purported to occur when the LAD processes input and accesses UG to identify appropriate parameter settings. In "Berom," Yancey's solution is plausible, but only given that Gonish and the other aliens came to earth knowing an earth-style form of communication that is (at least partially) already known.

2.2. ANOTHER CLOSED-SET GUESSING GAME? How did the aliens learn Bentley's Commercial Code in the first place? This is more problematic. Yancey explains that the aliens must have intercepted thousands of facsimile messages over the years, some perhaps with labeled diagrams. "After all," he says, "code is still language!" (Berryman 1978:315—note the relevance here to the input = language assumption). What we must remember is that what the aliens intercepted were radio waves (light in a part of the spectrum invisible to humans). From these radio waves, they somehow were able to determine that there were patterns in the signal which correlated with graphic forms, and that those graphic forms in turn correlated with speech articulations. They supposedly determined all this from the patterns in the signal, perhaps with the help of a number of diagrams. But what diagram in a fax (even assuming such diagrams could be reconstructed by the aliens) would explain, for example, that "DIZUH DAELF FEAVO RIGUB KUKIB CUGYA OKGAP ICSCO" would represent 'Contracts for computing equipment have been signed [in] New York. Commence

There are certain universal ideas and concepts common to all intelligent life. This device instantaneously compares the frequency of brainwave patterns, selects those ideas and concepts it recognizes, and then provides the necessary grammar. ("Metamorphosis" 2004[1966])

Episode 1 of the BBC television version of Douglas Adams' *Hitchhiker's Guide to the Galaxy* (a 1981 adaptation of the original radio program, both of which preceded a series of books by Adams) spoofs the concept of the universal translator via the Babel Fish, which is

...small, yellow, leechlike, and probably the oddest thing in the universe. It feeds on brain wave energy, absorbing all unconscious frequencies and then excreting telepathically a matrix formed from the conscious frequencies and nerve signals picked up from the speech centers of the brain, the practical upshot of which is that if you stick one in your ear, you instantly understand anything said to you in any form of language. The speech you hear decodes the brain wave matrix. (*Hitchhiker's Guide to the Galaxy* 1981)

At this point we might ask, why shouldn't a universal translator that works by detecting brain waves be plausible if those who wish to communicate have the same language organ?

production immediately' (Kallis para. 6)? The plausibility, or face validity, of the aliens being able to come to any significant understanding of Bentley's Commercial Code from the radio waves alone is rather low, to say the least. That they should be able to determine the articulations [bɛrɒm] corresponding to "BEROM," for example, is not at all believable.

But suppose the aliens had a "language organ" as Chomsky (2002:64) *assumes* to exist, one which includes the language learning device (separate from the language understanding device) which he posited in Chomsky (1966:26). Further suppose that parallel evolution provided these very humanoid aliens with a UG compatible with the one Chomsky assumes humans possess.

If the input for being able to figure out a language consists of language (a signal containing patterns which possess a structure and carry meanings) then Yancey's exclamation that "code is still language" must be correct. Thus—assuming that the aliens tried to convert the radio waves of the facsimile transmissions into sound waves—unless the aliens' UG is very different from that of humans, those sound waves should have been adequate input for their LAD's, according to Chomskyan theory. Further, unless there is some perceptual constraint which prevents sound waves not created by human(oid) articulation (fax noises) from affecting their alien UG, those sound waves should have been adequate input, again according to Chomskyan theory. So, if we can assume compatible UG and a lack of perceptual ("performance"?) constraints on the exact nature of the sound waves, an audible version of the facsimile transmissions should have let the aliens learn Bentley's Commercial Code, according to Chomskyan theory.

Of course, there is no reason the version of the Code the aliens would learn should include Roman alphabet or human-like speech articulations. We should think it as likely for them instead to be buzzing and chirping at Yancey and his colleagues like humanoid approximations of a fax machine.

Let's try to make it more plausible. Let us alternatively suppose that Gonish is not biologically an alien, but is descended from humans abducted in UFO's centuries ago, humans whose descendants forgot their native language(s) and are now flying around in alien spaceships speaking as humanly possible like the aliens who abducted them. Let us further suppose that the descendants of these alien-abducted humans did not simply treat the radio waves directly as an amplitude modulation signal (those buzzes and chirps), but used a computer program to convert the signal to speech articulations. (None of this is in Berryman's original story.) Of course, there is still no reason why the aliens would ever hit on something that looked like Bentley's Commercial Code or sounded like it when read aloud.

In every scenario outlined so far, the likelihood Berryman's aliens (or my alien-abducted humans) would be able to produce the original graphic forms and then associate them with the original articulations would be essentially zero. However, according to Chomskyan theory of the LAD and UG, they *should* be able to learn the language that purportedly underlies Bentley's Commercial Code, albeit an odd-sounding version of it. Despite what LAD/UG theory says about this, however, we know from Klein's (1986:44) Chinese Room thought experiment, that aliens whose neurology was anything like that of earth creatures would not be able to learn how to communicate from the fax transmissions alone.

It is not simply that fax transmissions do not contain details of articulation. The real problem here is that the fax signals do not carry structure or meaning. Structure and meaning are projections from the person (or alien) interpreting them onto the person's environment (Yngve 1996:2, 8, 297–98). The aliens, if they are at all like earth creatures in regard to how they learn, would need what Klein calls “the information received *in parallel* to the linguistic input in the narrower sense” (the sound waves generated by speech) (1986:44). Although Chomsky has denied the relevance of associative learning for learning how to speak and understand, it is clear not only from Klein's simple thought experiment, but also from the neurobiological evidence, that associative learning is at the core of humans' learning how to communicate (Lieberman, 2000:162–64).

2.3. ORDINARY ASSOCIATIVE LEARNING. After a brief argument with his two colleagues, Yancey attempts to learn how to communicate with Gonish by actually communicating about things in the real world (“Yancey,” “Gonish”) and diagrams of real things. However, Yancey, in short order, comes to regard this approach as a waste of time. Certainly, from a plot perspective, it is. *How* Yancey comes to understand the aliens is not important; the plot tension centers around his interactions with the U.S. military overseeing the first contact situation, not his interaction with Gonish. Still, we have to regard this third type of attempt at communicating to be the most plausible.

Similar examples can be found in stories in which the difficulty of communicating in a first contact situation *is* central to the plot. I have taken a few such examples more or less at random.

In Cherryh's (1994) *Foreigner*, a ship carrying a group of human colonists is lost somewhere far from earth. When a human colonist first meets a (more or less) humanoid native of a new planet (an *ateva*) where they find themselves, the *ateva* begins to communicate through gesture. Fearful of other humans, the *ateva* “beckoned to him, once, twice, unmistakably to get up” (1994:39) so that the two of them can attempt to communicate without interference. The *ateva* beckons repeatedly, and says, “Nil li sat-ha” (1994:39). When the human falls down as the two are fleeing from the other humans, he says this again. The human comes to understand that he is being asked to get up and go on the basis of this experience (1994:38–45). The plausibility here is very high, just as it would be if a similar situation involved not a human and an *ateva* but an English-speaking American and a Spanish-speaking Mexican saying “Vamos.”

In *Explorer* (Cherryh 2002), a later book of the same series, Cherryh's humans and *atevi*³ generations later are in a starship exploring their region of space. They encounter an alien ship. They have no idea how to communicate with the aliens. They see that the alien ship has running lights, and conclude that the aliens must be able to perceive visible light. They flash their own lights to see if the aliens will echo these back (2002:138–153). Receiving a response, they signal a turn by means of their ship's own running lights and then execute the turn. They use their lights to signal forward motion (in a back-to-front on-off series) and follow this up with thrust that sends their ship forward. They then attempt to transmit

³ Cherryh tells us that the plural of *ateva* is *atevi*, so I will comply with her convention.

simple images in an 8x8-bit grid. The aliens figure this out, and eventually images begin to flow back and forth. Through these images, the aliens communicate to the human-atevi on the ship that one of the aliens' crew is being held captive by humans on a nearby space station. A dramatic jailbreak is staged by the mixed human and atevi crew and the alien, named Prakuyo (as humans and atevi approximate the alien's articulation) is temporarily their guest. One of his hosts (a human named Bren Cameron) starts learning how to communicate with him first in Me-Cameron-You-Prakuyo mode, but this rapidly progresses, as Prakuyo sits down with his hosts over tea cakes and ice water. They draw sketches, they point at things, they speak about things that are happening as part of their interaction. Again, the plausibility level is very high, as high as the plausibility of humans, atevi, and Prakuyo's species being able to be comfortable under very similar environmental conditions, all being bipedal and humanoid in form, all being able to digest similar proteins, having similar perceptual capabilities, and so on.

In Sagan's *Contact* (1985:236–239), the President of the United States receives an explanation of how an alien message received by radio telescopes on earth was decoded. The form of the signal suggests a visual representation, a sort of multidimensional book. The alien creators of the signal depict things and provide textual labels, and embed movies — because “movies are perfect for verbs” (1985:236). It is explained how “they can communicate abstractions with numbers” (1985:236–37). (In the movie version, Zemeckis 1997, it is a different character, Eleanor Arroway, played by Jodie Foster, who in a key scene explains this to a government commission.)

A final example is interesting because it mixes highly implausible and plausible elements: Sawyer's *Starplex* (1996).⁴ Humans, dolphins, and two extraterrestrial species are exploring space on the ship *Starplex* when they encounter vast (planet-sized) beings made of dark matter (whom the *Starplex* crew decide to call “darmats”).

They at first do not know they have encountered intelligent beings, but upon examining radio signals from the darmats, they find that

patterns of one-second duration or less kept cropping up.... Some have been repeated once or twice, but others have been repeated many times. Over ten thousand times, for a few of them. (Sawyer, 1996:99–100)

It is supposed that “each of these patterns could be a separate word” and that the most commonly occurring could be “pronouns or prepositions” (1996:100). Interestingly, within a few paragraphs, the assumed patterns *are* words, e.g., a character says, “No word is ever doubled. Certain words only appear at the beginning or end of transmissions” (*ibid*). On this foundation, it is supposed that an analysis can proceed. Of course, there are some

⁴ One of the cooperating groups of extraterrestrials on *Starplex* is called “the Ib.” Each Ib is actually a corporate entity made up of a few separate species acting together in a symbiotic relationship. One part resembles a chair, another a pair of wheels, and another a large watermelon (the last of which rides in the wheelchair created by the first two parts). This creates a certain sense of silliness. Still, there is less implausibility in the Ib's anatomy than in some aspects of how the first contact situation between the crew of *Starplex* and the dark matter beings proceeds.

very questionable assumptions here, even within a very traditional linguistic framework: (1) that a word is an invariant signal pattern, (2) that each word will have a unique signal pattern, (3) that “doubling” (see above) is not something that happens in communication signals, (3) that planet-sized beings made of dark matter would communicate in a way that could be described in terms of pronouns and prepositions, and so on. The characters’ way of approaching the problem is also highly suspect: what starts out as a supposition becomes an assumption, which is then taken as true for the purpose of working out additional truths. This is more in the realm of *philosophical* fiction than *science* fiction, since this is how philosophy, not science, operates. In fact, the explorers on Starplex do not really get anywhere with this approach, other than constructing a signal to get the darmat’s attention.

Sawyer has the Starplex crew essentially abandon that course in favor of one more like what Cherryh’s human and atevi follow in *Explorer* (2002—see above). They send out a probe which blinks lights and uses the blinking and movement of the probe to begin developing a system of communication beginning with counting and basic arithmetic.⁵

After they do a bit of this, they take the probe through a series of maneuvers, eliciting from a darmat “the words for ‘up,’ ‘down,’ ‘left,’ ‘right,’ ‘in front,’ ‘behind,’ ‘receding,’ ‘approaching,’” (1996:148) and so on. In the process they signal back and get “the darmat terms for ‘correct’ and ‘incorrect’” (1996:148). Thus, they use as a first basis for communication the experiences they are assumed to be sharing, and the level of plausibility goes up.

3. CONCLUDING REMARKS. Mainstream linguistic theory assumes that the input for language learning is the primary linguistic data (Chomsky 1966:26), i.e., the well-formed sentences of a language (see the brief review of literature in Coleman, 2005:203–7). Klein’s Chinese Room (1986:44) thought experiment shows that the above assumption is untenable. Some of these very *implausible* science fiction scenarios of first contact are surprisingly compatible with mainstream theories of the LAD and UG, as shown in this paper. The more plausible first-contact scenarios are compatible with the idea that learning how to communicate happens by associative learning prompted by input in parallel sensory-perceptual channels, not by setting parameters in a predetermined, hard-wired system via recognition of abstract features in an input signal. The obvious conclusions—(a) that input is parallel sensory experience, not language, and (b) that UG does not underlie learning how to communicate—are not new and revolutionary if we look beyond the area that calls itself “mainstream linguistics” and examine what is actually going on in related fields, such as in the neurobiology of learning (see Lieberman 2000:12–13, 161–64, also cited in footnote 1, above). My conclusion: BEROM (‘suggest we pool our information’).

⁵ Why are math and arithmetic assumed to be universal? Humans’ tendency to consciously divide up their world into same-different is the basis for counting (you have to have two of the same in order to count them). What if there is a way for a being to be intelligent without seeing its environment in terms of same-different? I am reminded of the quotation often attributed (unattested, however) to the science fiction writer and editor John W. Campbell, “Write me a creature that thinks *as well as* a man, or *better than* a man, but not *like* a man”. In this, Cherryh’s human and atevi characters create a great deal of plausibility by first determining the sensory-perceptual capabilities of their aliens, and then deciding how to proceed.

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REDUCTIONISM IN GENERATIVE LINGUISTICS

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[A]ll scientifically meaningful statements are translatable into physical terms—that is, into statements about movements which can be observed and described in coordinates of space and time. (Bloomfield 1970[1936]:375)

Anthropologists and philosophers have found themselves forced to invent pseudo-linguistic ‘mental’ entities such as ‘ideas’ or ‘concepts’, in place of the obvious and empirically discoverable morphemes and larger grammatical forms of a language. (Hockett 1958:139)

THESE TWO STATEMENTS, made by well-known linguists twenty-five years apart, are emblematic of a certain conception of what it means to be scientific. They reflect the view that all scientific statements must be based upon physically observable categories. This view is expressed forcefully by Victor Yngve (2006:267), who proposes what he calls a hard-science linguistics which rejects the study of the purportedly non-existent object called ‘language’ in favour of the study of “real people and other parts of the real physical world”. In this paper I wish to show how this sort of view has led generative linguistic theories into a cul-de-sac. In passing a few comments will be made on other approaches which are based on similar presuppositions.

The restriction of science to the physical domain referred to in the paragraph above reflects a legitimate concern to eliminate subjective judgements from science. Yngve (p. 268) thus rejects introspective observations and feelings “because they are subject to observer bias and cannot be verifiably reproduced by others.” One can only agree with him that a scientific statement must be based on observable data and consequently be testable by other researchers, as an untestable assertion could very well correspond to a purely subjective and personal opinion with no connection to reality. Recent reflections in the philosophy of science have suggested, however, that subjectivity cannot be completely eliminated from science since any observation necessarily requires an observer. Along with observability, another essential condition for data to be scientifically admissible has been proposed—that of intersubjectivity:

[T]he arguments that we use in empirical science are expressed in intersubjective languages and must include well-established references to empirical facts, so that anyone can examine whether the arguments and the empirical proofs are valid (Artigas 2000:231).

Scientific data must not only be observable in some way, but all observers must perceive the same thing and be able to communicate their observations in such a way that other observers can check whether these observations, as well as the arguments based upon them, are valid. Intersubjectivity also plays a central role in natural language, where one sees the distinctly human ability to take another's perspective at work in everyday cognitive processing, which, like science, allows us to learn about the world through other people (cf. Verhagen 2005).

I wish to argue in this paper that meaning—an essential aspect of language which must be excluded from consideration if one adopts the positivist stance exemplified by the quotations from Bloomfield and Hockett above—is intersubjectively observable, and consequently can be admitted as scientific data. More importantly, I will argue that in order to adequately deal with its object, linguistics must take meaning into account. A good part of my argument will consist in showing the impasse to which the exclusion of semantics leads in the understanding of human language. But before doing that I would like to briefly comment on a position which includes semantics but treats meaning as a physical object.

Lamb (2006) in a paper entitled “Being realistic, being scientific” defends the legitimacy of treating language as a valid object of scientific study, his argument being that the individual linguistic system as it exists in a particular speaker is “a concrete observable physical object” (p. 208). This object corresponds to a cortical network in the brain of the individual which, for each word, associates a sub-network representing the spoken form of the word to another sub-network “representing information pertaining to that word” (p. 207), i.e., its meaning. This position raises several problems. First of all, one wonders how a “concrete physical object”, such as the meaning of a word like *tomorrow* is purported to be, can evoke something which has no concrete physical existence: how could we ever have a concept of the future if meaning was merely a cortical network? Secondly, by situating meaning on the level of our neurons, this view detaches it from human experience, for it implies that if one could stimulate in the right way the neurons of someone who had never seen a dog, one could cause him to know the meaning of the word *dog*. But how could such a neurological stimulation be meaningful to someone if that person cannot relate it to any experience? Thus while neural networks should certainly be of interest to the linguist, they are not sufficient to account for the properties of natural-language meaning and so one cannot simply identify meaning with such networks.

Let us return now to the discussion of what happens when meaning is excluded from the study of language. One of the things that happens is the reduction of grammar to mere distribution. Thus Hockett, who defines morphemes as “the smallest individually meaningful elements in the utterances of a language” (1958:123), sees the grammar of a language as a description of “(1) the morphemes used in the language, and (2) the arrangements in which these morphemes occur” (p. 129). Meaningful units such as morphemes are dealt with as much as possible in the same terms as meaningless units of sound, or phonemes. Just as the recognition of a phoneme is based on complementary distribution and phonetic similarity, so the definition of a morpheme is based on complementary distribution and semantic similarity, but the recourse to semantics is limited to answering the question ‘Is the meaning the same or is it different?’. This allows one, for example, to classify the forms

[ɪz], [s] and [z] in the English words *bridges*, *lids* and *bits* as one morpheme, since they are each found in different phonetic contexts (complementary distribution) but express the same meaning.

As long as one's goal is merely to identify the minimal semantic units of a language, this method is fairly adequate. However, when it comes to accounting for the way these units are combined and used, its deficiencies quickly become apparent. In this view of language, syntax has to do merely with the arrangements in which morphemes occur. Since the focus is restricted to the observable sign, the essence of syntax concerns how linguistic signs are grouped together into constituents, gradually building up from basic blocks of morphemes to the complex level of the sentence. So, for instance, in *The ducks flew away*, the morphemes 'duck' and 'plural' combine to form the noun *ducks*; the latter combines with the article *the* to form the noun phrase *the ducks*; on the side of the predicate, the morphemes 'fly' and 'past' combine to form the verb *flew*, which combines with the adverb *away* to form the verb phrase *flew away*; and the latter combines with the noun phrase *the ducks* to form the sentence. A sentence is consequently treated as a sequence of morphemes which are grouped together according to a hierarchical structure. To describe the syntax of a language is to describe in as simple and general a fashion as possible all the ways in which the morpheme and phrase units of a language can be arranged.

Here another positivist axiom must be mentioned concerning the nature of the object of linguistics, language itself. Since all that is directly observable of language is the production of certain phonetic, graphic or gestural sequences, a language is defined by Bloomfield as "the totality of utterances that can be made in it" (1970 [1936]:129–30). This corresponds to Chomsky's (1978[1957]:13) famous definition of a language as "a set (finite or infinite) of sentences, each finite in length and constructed out of a finite set of elements." Such a view of language reduces it to a set of observable objects.

Now a set can be treated as a mathematical object describable by means of rules which allow one to generate it: with the simple instruction ' $n \times 2$ ' (where n is a whole number) one can generate the entire set of even numbers. If a number does not conform to this rule, it is not a member of the set. The goal of linguistics according to Chomsky becomes then "to separate the *grammatical* sequences which are sentences of L [language] from the *ungrammatical* sequences which are not sentences of L and to study the structure of the grammatical sequences" (*ibid*). The grammar of a language accordingly is "a device that generates all of the grammatical sequences of L and none of the ungrammatical ones" (*ibid*).

One form that such a grammar can take is that of a series of rewrite rules, such as:

1. Sentence \rightarrow NP + VP
2. NP \rightarrow T + N
3. T \rightarrow *the*
4. N \rightarrow *man, ball*, etc.
5. VP \rightarrow Verb + NP
6. Verb \rightarrow *hit, took*, etc.

This corresponds to a phrase structure grammar, which is one possible way of describing the arrangements of morphemes in a language. However, if one adds to such a grammar another type of rule, which treats some arrangements as derived from others, one can avoid the reduplication of certain rules and achieve a more elegant and economical description. (*ibid*:44). Thus, to give a very simplified example, deriving the passive *John is frightened by sincerity* from *Sincerity frightens John* allows one to exclude **John is admired by sincerity* from the set of grammatical sentences of English based on the ungrammaticality of **Sincerity admires John*.

Mainstream Generative Grammar has never called into question the basic goal of developing a computational procedure for generating all of the grammatical sentences of a language and excluding the ungrammatical sequences. In minimalist theory, its most recent formulation, a sequence is generated by the syntax through the gradual assembling of lexical units to form a structure which is spelled out and submitted to the perceptual-auditory and conceptual-intentional interfaces for interpretation. If it meets the legibility conditions at both interfaces, it is acceptable; if not, the derivation is said to “crash” (Seuren 2004:33). Consequently, a generative grammar is primarily a distributional grammar. It treats sentences as arrangements of morphemes, and seeks to formulate configurational rules which could generate the right set of positional arrangements. The starting-point for the operation of the rules has varied—in minimalism it begins with the selection of a certain number of lexical items from the lexicon. But the nature of the grammar has not changed, and meaning is kept out of the picture as much as possible, the essence of grammar being taken to be syntax, i.e., position or configuration.

Since language obviously serves the purpose of communication, semantics must be incorporated in some way, however. In the generative model this is done as late as possible, at the peripheral level of the interface between the syntax and the conceptual-intentional system. Minimalism does include ‘semantic’ features along with phonological and syntactic ones in the composition of lexical items (cf. Hornstein, Nunes & Grohmann 2005:291), but semantic features are treated as merely “interpretable”, i.e., they are assigned an interpretation only once they reach the interface level with Logical Form. This entails that semantics is interpretative and propositional, and syntax is autonomous from meaning. There are very important problems with the way in which this model deals with semantics and its relation to syntax. Seuren (2004:16) has aptly characterized minimalism as proposing a “random-generator” model of syntax, whereby the latter acts as an “unguided sentence generator, randomly selecting items from the lexicon and ‘merging’ these into proper syntactic structures”. He criticizes this model for not respecting the chain of causality observed in the real use of language, which always begins with a thought that the speaker wishes to communicate which guides the whole process of sentence formation. Seuren also points out (p. 161) that it is “absurd” to postulate that “a randomly generated sentence structure should be taken to pass an instruction to the cognitive system of the same organism for the sentence to be interpreted.” On the contrary, the speaker must assemble lexical items in an appropriate way so as to express the cognitive content he wishes to communicate.

Regarding the reduction of meaning to propositional semantics, two factors converge to make this the natural option for a generative grammar. The first of these has to do with

the starting premise that meaning is not treatable scientifically, and consequently must be excluded from the analysis as much as possible. We have seen how this led to treating morphemes, defined as the smallest *meaningful* units of language, as if they had no meaning, i.e., a distributional approach to syntax. Here we see that the inevitable return to meaning occurs only once the syntax has operated, i.e., on the level of the sentence. Since the question of truth and falsity arises on the level of the sentence, and not on the level of the word or morpheme, it is natural in a generative model for semantics to have recourse to the categories of propositional logic. Moreover, since truth conditions are defined in terms of how the world must be in order for the sentence to be true of it, this creates the illusion of being able to treat meaning as something empirically observable, which is reassuring to the scientific positivist.

Delaying the recourse to meaning to the sentence level is the source of many formidable problems, however. Doing this assumes that sentences, or better, the sequences of morphemes that are grammatical in a language, have meaning in the abstract, an assumption which is also shared by logic. Real utterances, however, cannot be determined to be true or false without taking into account the situation in which they are uttered and the intention of the speaker who produced them. If someone says *It is raining*, one must avert to the meteorological conditions at the time and place of utterance, or perhaps to some other place that the speaker has in mind and to which he wishes to refer. Even a statement such as *Water is composed of hydrogen and oxygen*, which might appear to be true outside of any particular situation and independently of the speaker's intention, would not be true applied to ordinary tap water if the speaker's intention were to convey the message that tap water is composed exclusively of hydrogen and oxygen, as the liquid that flows out of our taps also contains chlorine, fluoride, bacteria, etc. The utterance is an ephemeral unit assembled on-line for the purposes of communicating a particular cognitive content. To treat such a unit as having a stable permanent meaning is to misrepresent its nature. It is to seek the existence of a stable relation between sound and meaning on a level at which such a relation does not exist.

This has grave consequences for the understanding of language, as it severs the essential bond upon which the latter is based. Once cut loose from any stable relation to the linguistic sign, semantics is almost completely unconstrained and can float off into the realm of possible worlds. Since any sentence can correspond to an infinity of situations in which it could be said, with pragmatic factors and possible variation of speaker intentions complexifying the picture even more, one wonders how the hearer could ever guess the meaning the speaker was trying to convey if this meaning corresponded to the exact state of the world being referred to. Even something as apparently simple as the sequence *The circle is inside the square* can refer to a vast multitude of different real-world situations: Is the circle 100% inside the square, or only 99.9%, 99.8%...; Where is the circle inside the square?; Are there other objects inside the square?; etc. In this view, the semantics of a language becomes a relation between an infinite set of sentences, on the one hand, and an infinite set of infinite sets of possible worlds in which these sentences would be true. Defining a language as an infinite set of sentences makes it into an imaginary infinite; defining the meaning of a sentence as an infinite set of possible worlds makes it, too, into an imaginary infinite. It is

paradoxical that the starting premise that linguistic science must limit itself to the realm of the physically observable should lead to such a proliferation of physically unobservable entities. Moreover, if this corresponded to what language and meaning were, a language would be fundamentally unlearnable, as no child could ever acquire both an infinite set of morpheme-sequences and an infinite set of possible worlds constituting their meaning. The only way out of this impasse would seem to be to appeal to some form of powerful generative capacity, as generative grammar does for syntax. The multifarious diversity of the universe might be supposed to account for the infinity of the set of meanings (but that would still not solve the problem of talk about things that do not really exist.) Recourse to an autonomous syntactic generator, however, renders mysterious any connection between form and meaning, as it operates independently of both, as if the cognitive content which the speaker wishes to express had nothing to do with the forms that he uses to communicate this content and their arrangement.

Given the impasse to which the exclusion of meaning leads in linguistics, it would seem legitimate to call this postulate into question. The exclusion of semantic content as a *persona non grata* from the realm of scientific data has been shown to render human language incomprehensible. The question arises at this point as to whether, if meaning is an integral part of language, linguistics can claim to be a science. To answer this question I would like to return to the notion of intersubjectivity as the condition for data to be amenable to scientific investigation. If this is so, it can be argued that meaning in human language constitutes a paradigm case of intersubjectivity, and so, in principle, should be a possible object of science. The essence of intersubjectivity is that all competent observers must agree on the nature of the data used to confirm or disprove a scientific hypothesis. I would suggest that the essential property of human language is that all speakers basically agree on the meanings of the words and morphemes of the language used in their speech community. This is the very condition for a language to be able to function as an instrument for communication between speakers. Of course, misunderstandings are possible (cf. Tannen 1990), and for some concepts there can be divergences among speakers such as that between the chemist's and the ordinary person's conception of water. However the chemist can still understand what the ordinary person means by the word, and so communication between the two is possible. Consequently, meaning is perfectly admissible as scientific data in the multitudinous cases where native speakers agree that a given utterance in a given situation conveys a given message. Whether linguistics will be able to explain why this is so for specific utterances is not guaranteed. Nevertheless, at least the data are there to provide a legitimate object of scientific enquiry.

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CONSTRUCTIONAL MEANING AND LEXICAL MEANING

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IN *CONSTRUCTIONS: A CONSTRUCTION GRAMMAR APPROACH TO ARGUMENT STRUCTURE*, Adele Goldberg (1995) presents the following sentences, illustrative of the caused-motion construction, as evidence that syntactic structures can have meaning independent of lexical meaning:

- (1) They laughed the poor guy out of the room.
- (2) Frank sneezed the tissue off the table.
- (3) Mary urged Bill into the house.
- (4) Sue let the water out of the bathtub.
- (5) Sam helped him into the car.

The remarkable feature of these examples is that while the sentences all seem to have the meaning of causing motion, their verbs do not. Thus, while the verb *laughed* doesn't appear to have such a meaning, the natural construal of sentence (1) is that the people referred to by *they* caused the person referred to as *the poor guy* to move *out of the room* by laughing at him. Since none of the words in these sentences have the caused-motion meaning, Goldberg's conclusion is that this element of the meanings of these sentences is best seen as being derived from the Subj-V-Obj-PP structure or construction that they all have in common.

Such examples of constructional meaning seem to present a problem for a lexical or projection approach; according to the lexical approach sentence meaning is a function of the meanings of the lexical items and the syntactic structures of sentences. Contrary to what these examples suggest, such a lexical approach assumes that almost all of sentence meaning arises from the lexical items themselves, with the syntactic structure serving the exclusive purpose of locating the arguments for predicates.

This paper will first briefly examine the main features of the constructional and lexical approaches: what does each of these two approaches see to be central to how language works? Then we will look at two proposals for dealing with the problem posed by sentences like those in (1)–(5). First we will look at the notion of conversion by construction meaning described by Laura Michaelis (2003), a notion that pretty closely follows the main ideas of the constructional approach. Then we will look at the integrative approach suggested by Juan Pablo Mora Gutiérrez (2001), a proposal that calls for an integration of the constructional and projectionist approaches after a consideration of their positive and negative attributes. Throughout we will focus our attention especially on what each of these approaches would have to say about the specific class of sentences in (1)–(5) above,

the caused-motion construction. We will conclude with a brief comment as to what all this has to tell us about the nature of language.

1. THE CONSTRUCTION GRAMMAR APPROACH. One of the basic principles of the construction grammar (CG) approach is that language consists centrally of pairings of constructions with their functions or meanings. According to CG, these very particular and specific construction-meaning pairings are essential to an understanding of how a language is learned and used. This emphasis by construction grammar on the functioning of specific constructions distinguishes it sharply from other approaches to grammar which look for broad universal generalizations intended to account for what is common across different languages. The intention of such competing approaches is to explain language as a human genetic endowment, what Steven Pinker (1994) referred to as the language instinct. For example, Noam Chomsky's earlier (1981) Principles and Parameters (PP) approach highlighted purported universals such as the relative position of the head of a phrase: in the PP approach, head position is a parameter that could be set differently depending on the language input an infant is exposed to while acquiring the language. Once this parameter is set, the child is thought to be in a better position to acquire the specific syntactic patterns of the language. Such specific patterns, according to the PP approach, are epiphenomenal, a mere coincidence of the more general and more explanatorily significant feature of head position. The tables are quite reversed in the construction grammar approach, however, with specific constructions, like the Subj-V-Obj-PP construction, being the heart of the matter with respect to explanation in language. In his review of Goldberg's *Constructions at Work* (2006), Robert Van Valin makes this contrast between what he calls the "particularist" approach of CG and the "generalist" approach of generative grammar especially clear (2007: 235).

It should be pointed out here that in CG, constructions are not limited to large syntactic structures: according to Goldberg, constructions also include smaller units like morphemes and words. What is central here is the combination of form with meaning or function. According to Goldberg, "all levels of grammatical analysis involve constructions: learned pairings of form with semantic or discourse function" (2006:5).

2. THE PROJECTIONIST OR LEXICALIST APPROACH. Insofar as the structures that we will look at are concerned, the major claim of the projectionist or lexical approach is that the meaning of a simple sentence is determined compositionally out of the meanings of its parts, with the main verb determining the argument structure of the sentence and the NPs and adjuncts filling out the structure of the sentence. This approach to meaning is related to Gottlob Frege's idea of an individual predicate as an unsaturated form that needs to be filled out or saturated by its arguments in order to form a proposition. This approach has been very successful in logic and has been largely adopted into the formal semantics approach to meaning in natural language. It is also related to the mathematical notions of functions and variables.

3. ACCOUNTING FOR THE CAUSED-MOTION CONSTRUCTION. Returning to our caused-motion sentences in (1)–(5), we see that what needs to be accounted for here, beyond the

more commonly occurring meanings of the words in the sentences, is exactly the caused-motion component. In addition, what Charles Hockett (1997), following Lucien Tesnière, referred to as the valences of the verbs, has been stretched from what we usually find. Thus both *laughed* and *sneezed* are intransitive verbs, but in (1) and (2) they are used in a construction with what seems to be an object and a prepositional phrase denoting some kind of path or direction of motion. Sentence (6), an interesting related example from the same paper by Hockett, involves a similar stretching of the valence of the verb:

- (6) She's burping the baby.

After pointing out that *burp* is an intransitive verb, Hockett suggests that instead of referring to its use in this sentence as transitive, it would be better to refer to it as causative. Something similar seems to be going on in our caused-motion sentences, except that we note that (7) and (8) are unacceptable.

- (7) *They laughed the poor guy.
(8) *Frank sneezed the tissue.

In fact, Hockett points out that in *She's burping the baby*, the object is actually the actor, since it's the baby who burps, while we might refer to the subject as the agent. Perhaps part of the reason for the unacceptability of **They laughed the poor guy* is that this shift in roles is unavailable: *the poor guy* cannot be the actor here. However, once we add the path, *out of the room*, the sentence becomes acceptable. Is this because *the poor guy* then becomes a kind of actor, having to move or walk out of the room? Perhaps, but what also seems to be involved is that the real second argument of the causation becomes the event of the man leaving the room, an event that is only implicit in the sentence: the going or leaving is implied by using only the path, *out of the room*. What seems to be going on in a construal of this sentence, then, is a great deal of stretching and manipulation of the commonly occurring meanings of the words used.

But how does construction grammar explain the construal of such sentences? Consistent with the basic ideas of construction grammar, Laura Michaelis states the following "override principle":

If lexical and structural meanings conflict, the semantic specifications of the lexical element conform to those of the grammatical structure with which that lexical element is combined. (2003:9)

Thus, when *laughed* occurs in a sentence such as (1), there is a conflict between its commonly occurring meaning as an intransitive verb and the meaning of the caused-motion construction. The override principle ensures that the meaning of the caused-motion construction prevails, facilitating our construal of (1). The override principle seems to work well, and to make intuitive sense, except that we might well ask how we can account for the unacceptability of (7) and (8). Why don't the structures in those two sentences just override the

meanings of those two intransitive verbs and give us acceptable causative meanings as in sentence (6), or some other meanings appropriate to a simple transitive construction? In other words, why doesn't the meaning of the construction somehow succeed in prevailing in these sentences? The answer to that question would seem to involve the differences in the meanings of the lexical elements themselves. It may also involve our knowledge of the world: for (6) we know, given the verb *burp*, that the object, *the baby*, can be an actor, and that the subject, *she*, can be a causer of the action denoted by the verb; in fact, the sentence is consistent with a commonly occurring real world schema, so maybe our knowledge of the world is crucially involved in its construal. None of this seems to be available to us in trying to construe (7) and (8). What we can take from these considerations then is that a blind adherence to the override principle just won't do; an override can occur only if the meanings of the words will allow it.

In "Directed Motion in English and Spanish," Pablo Mora Gutiérrez makes a similar point with the following sentences:

- (9) a. I asked him to go out of the room.
b. I asked him out of the room.
- (10) a. I ordered him to go out of the room.
b. I ordered him out of the room.
- (11) a. I told him to go out of the room.
b. *I told him out of the room.

Mora Gutiérrez points out that while a lexical or projectionist approach will have no problem here, "the constructional approach will not be able to account for the unacceptable 'tell' sentence" (2001: §7.3). Mora Gutiérrez attributes this situation to the relative success of the two approaches in dealing with "idiosyncrasies" in the meanings of words: the lexical approach does a good job in capturing small differences in word meanings, while the constructional approach, by the very nature of its main emphasis, neglects such small variation in word meaning.

Nevertheless, the constructional approach has the advantage of parsimony in avoiding the multiplication of special caused-motion meanings for verbs like *laugh* and *sneeze*; the meaning of the caused-motion construction needs only to be specified once for the structure, and not separately for each verb that can occur in it. In addition, selectional restrictions can also be specified once for the construction. For example, Mora Gutiérrez points out that in the case of the ditransitive construction, as in (12) and (13) below, the requirement that the goal argument be animate can be specified once on the construction itself, instead of on each individual verb that can fit into the construction:

- (12) She slid the present to Susan/to the door.
- (13) She slid Susan/*the door the present.

On the basis of such considerations, Mora Gutiérrez concludes that the constructionist and projectionist approaches complement each other, and that what is needed is an integration

of the two. He suggests that what seems to be happening is that the meanings of verbs change over time as they are used frequently in certain structures. He quotes the results of a psycholinguistic experiment by Gentner and France (1988) which concluded that verb meanings are more flexible than the meanings of nouns and can be influenced by the structures in which they frequently occur. According to Mora Gutiérrez's integrated approach:

[B]oth the different lexical entries for the verbs and the constructions play a fundamental role in shaping the structure and configuration of the clauses of languages. Sentential meaning is the result, then, of the integration of the meaning of the verbs with the meaning of the constructions in which they appear, but at the same time the meaning of the verb is determined and can be changed to a great extent by the particular syntactic configurations in which it participates most frequently, giving rise to new lexical entries for that verb. (2001: §7.4)

Mora Gutiérrez's conclusion here is consistent with that of Van Valin. After outlining some of the main foci of CG and generative grammar, Van Valin concludes that "the reality of grammar is somewhere in the middle between these two approaches" (2007:39). The divergence between the two approaches seems tied to a difference in the two views of the source of language; Goldberg's CG approach sees language as arising from various cognitive structures that are not exclusively linguistic in nature, while generative grammar sees language as arising from a uniquely linguistic mental capacity, a language instinct or language acquisition device. Of course these larger issues go far beyond this short paper, but what seems to be suggested by looking at sentences like those in (1)–(5) is that language is at once both flexible and systematic. If our grammar is to capture both aspects of language then perhaps for verbs like the ones in (1)–(5) we need to go along with Mora Gutiérrez's suggestion that these constructions bring about a change in the meaning of the verb. In particular, it is not enough to suggest, as Goldberg (1995) does, that the caused-motion construction, with the structure Subj-V-Obj-Obl, gives the meaning "X CAUSES Y to MOVE Z" (Goldberg, 1995:3). Rather, we need to get something like the meaning "X CAUSES Y to MOVE Z by V-ING (at) Y." For example, (1) seems to mean something like "they CAUSED the poor guy to MOVE out of the room by LAUGHING at him." Is this omission of the meaning of the verb in Goldberg's suggestion of the putative meaning of the construction just an oversight? Maybe, but the omission certainly distracts our attention from the possibility that what happens in sentences like those in (1)–(5) is that there is a systematic change in the meaning of the verb precipitated by its presence in the construction. Such a possibility would allow us to maintain the projectionist approach while still allowing for the strong influence of constructional meaning. Of course, we are still left to account for cases where the verb's meaning doesn't change to avoid anomaly, as in sentences (7), (8), and (11). Perhaps this is just a consequence of the relatively unpredictable nature of language change. But in any case these are just the same sentences that seem to bedevil the constructionist approach.

4. CONCLUSION. Finally, I would like to put the following question and offer my own tentative answer: why does all this happen? Why aren't verb meanings more stable so that they

can be rigidly specified once and for all time in the lexicon, with their valences, argument places, and thematic roles all clearly spelled out? For me at least part of the answer seems to lie in the powerful creative impulse of language. All of the sentences in (1)–(5) seem to involve to a greater or lesser degree what Roman Jakobson (1960) referred to as the poetic function of language, the creative use of words to capture meaning in various situations. In exercising our creative impulses in our use of language, we reshape the meanings of our words again and again, bringing about change over the course of time. To revisit that essay by Hockett one more time, we find a clear statement of this idea:

[I]n speaking our language we constantly stretch the bonds, poets a lot, most of us usually just a little, as we use old material to deal with new situations. The total grammatico-lexical properties of the words we have used are thus altered, even if ever so slightly, both for us and for anyone who hears and understands what we have said. (1997:169)

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MOTIF VERSUS LOGOGRAM IN VINČA INSCRIPTIONS

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IN AN EARLIER *LACUS FORUM* (Griffen 2004b, for more detail see also Griffen 2003, 2004a), it was demonstrated that inscriptions found on artifacts in the Vinča culture of southeastern Europe dating from the fifth millennium BCE were in fact written language. The key to this analysis was the inscriptions on spindle whorls Jela 1 and 2, shown here in **Figure 1** (overleaf). When Jela 2 was rotated one eighth turn clockwise, the markings were found to be nearly identical—one indication of linguistically significant inscriptions. (The entire argument for the linguistic nature of the inscriptions is far too lengthy to repeat here, but it can be found in Griffen 2003; and a summary of all the evidence uncovered thus far can be found in Griffen 2007, which is regularly updated.)

In keeping with the widespread hypothesis that, if they did indeed constitute writing, they would have been logographic (see, for example, Winn 1981; Haarman 1989, 1996), three signs were isolated and identified. These consisted of sign {1}, a horizontal line with three vertical lines descending from an end; sign {2}, two vertical lines (for which a variant with one was also found); and sign {3}, three vertical lines. By comparing these with inscriptions on identifiable artifacts included in *Pre-writing in southeastern Europe* by Shan Winn (1981), it was further determined that sign {1} could be translated as 'bear', sign {2} as 'goddess', and sign {3} as 'bird', as in **Table 1** (overleaf). To achieve an acceptable degree of simplicity and clarity while recognizing the tentative nature of these findings, we can refer to logogram sign {1} simply as {BEAR}, logogram sign {2} as {GODDESS}, and logogram sign {3} as {BIRD}.

Accordingly, the inscriptions on Jela 1 and 2 were both translated as 'The Bear Goddess and the Bird Goddess are the Bear Goddess indeed'. Such a religious pronouncement on a spindle whorl made sense from the cultural perspective in which the spindle whorl was closely linked with religious contexts. Moreover, the entire phrase seemed to anticipate the development of the Goddess Artemis, as she was manifest in later Greek culture:

In the passage of the centuries many traditions of experience converged on her, and the figure whom the Greeks knew as Artemis carried memories from Neolithic Old Europe, Anatolia and Minoan Crete. The Old European Bear Goddess, Bird Goddess and the Weaving Goddess of the spindlewhorls can be rediscovered in the stories and images that surround her, and in the kind of festivals that were held in her honour. Spindles and loom weights were found in many of her shrines, and on Corinthian vases she holds the spindle of destiny as the weaver of the interlocking web of animal and human life. (Baring & Cashford 1993:323)

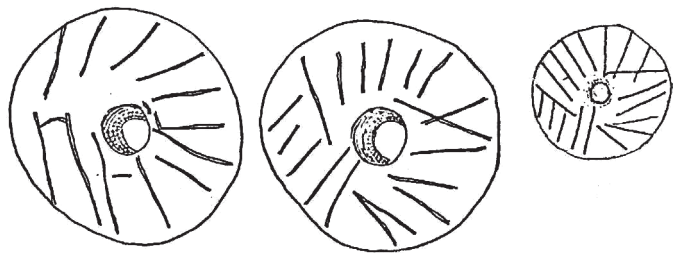


Figure 1. *Jela 1 and 2 (after Winn 1981:329).*

Sign	Form	Meaning
{1}	𐀀	bear
{2}	𐀁	goddess
{3}	𐀂	bird

Table 1. *Tentative decipherments.*

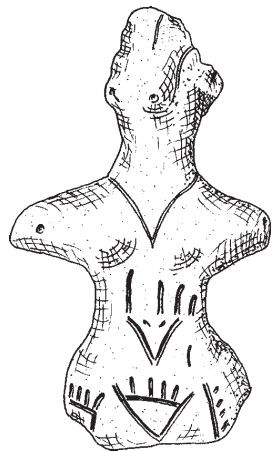


Figure 2. *Jablanica 1 (after Winn 1981:328).*

One observation in the previous treatment needs to be revisited. With reference to Jablanica 1, reproduced here in **Figure 2**, it was noted:

[T]he signs here occur between the chevron ‘necklace’ and the abdominal ‘beak’-shaped chevron with ‘eyes/nostrils’—both very well attested religious symbols for the Bird Goddess.... They also occur surrounding the pubic region, highly and appropriately suggestive of a fertility goddess. (Griffen 2004b:100–1)



Figure 3. Gomolava 1 (after Winn 1981:321).

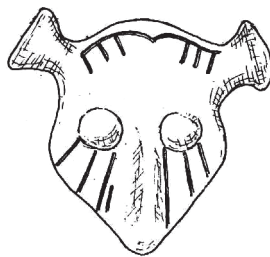


Figure 4. Pločnik 2 (after Winn 1981:360).

The rendition of the triangular pubic region does, however, presuppose the fact that the triangle was not a written sign or symbol, but a rather well-established artistic motif based upon natural anatomy. Moreover, the “beak” with the “eyes/nostrils” in the midriff is even more graphically a representation of artistic elements that were used to characterize the avian nature of the figure.

Of more interest for our purposes though, is the “necklace”—a single chevron that appears to be dangling from the neck of the Goddess. As Marija Gimbutas documents quite extensively and convincingly in *The Language of the Goddess* (1991:chapter 1), this chevron is an artistic motif representing the Bird Goddess on figurines throughout the Vinča region.

Here we find a highly significant aspect of the Vinča inscriptions: the three vertical lines of the logogram {BIRD} and the chevron of the artistic motif in the “necklace” do not overlap.

When {BIRD} appears in isolation, it could conceivably be taken either for a linguistic label or for an artistic motif. But in her extensive examination of the evidence, Gimbutas does not make this connection in the art. The sign does, however, occur repeatedly in combination with {GODDESS}—a characteristic of written language—to render the Bird Goddess, as in Gomolava 1, in **Figure 3**.

The “eyebrows” of Gomolava 1 consist of the extended chevron as artistic motif. Once more, as in Jablanica 1, the presence of the artistic motif provides a very useful redundancy between the two systems, and this helps to establish the viability of the linguistic signs. Yet, the two systems themselves are kept separate.

Even in the case of Pločnik 2, in **Figure 4**, {BEAR} is used in a sort of calligraphy, perhaps in place of eyebrows, although eyebrows are not otherwise found on bear figurines. The divine nature of the figure is rendered artistically through the radiant lines descending from the eyes. Thus, the written language appears to have been used simply as a label for the work, rather than as an integral part of the art itself.

Perhaps the most provocative case of a potential blurring of the line between linguistic sign and artistic motif occurs in Gimbutas’ corpus as the Bird Goddess in **Figure 5** (overleaf).

What is significant about this figure is the triple chevron “necklace.” On the one hand, it may be argued that the triple rendition of the chevron may show a heightened degree of reverence, or perhaps simply an artistic flourish. On the other hand, however, it could be

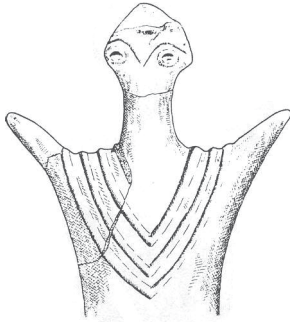


Figure 5. *Bird Goddess* (after Gimbutas 1991:8).

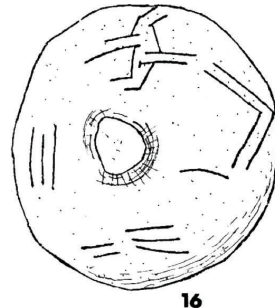


Figure 6. *Tordos 16* (after Winn 1981:269).

argued that the triple form of the chevron is somehow reminiscent of the triple vertical lines of {BIRD}—a “pun,” as it were, on the artistic/linguistic “name” of the Goddess.

Be this as it may, this last figurine does illustrate a far more important, and far more overarching point: in spite of the fact that the chevron is found extensively as an artistic motif to evoke the name of the Bird Goddess, and in spite of the fact that this simple motif could certainly have been used linguistically, the chevron never occurs in a string in any way that could support an interpretation as an equivalent to {BIRD}.

To be sure, the chevron does occur on a considerable number of artifacts alongside {BIRD}—and even more tellingly alongside the combination of {GODDESS} and {BIRD}. A particularly good example can be found on the spindle whorl Tordos 16, in **Figure 6**. However, the chevron never occurs in sequence with other inscriptions that might be taken as logograms, such as we find on Jela 1 and 2. If anything—now that we are aware of the linguistic status of these signs—such inscriptions as that in **Figure 6** appear to emphasize the connection between two different kinds of rendition. We might even speculate that they may have been comparable to a picture labeled by a word—something particularly important in the development of reading skills and certainly attested on later Greek vases.

It may very well be that Tordos 16 combines writing, motif, and stylized artistic depiction all at once. If we rotate the whorl one quarter turn either clockwise or counterclockwise, the figure on the right or left, respectively, can be interpreted artistically as the side view of a bird (wings and tail up; legs and head down). The symmetry of the arrangement would actually parallel Jela 1 and 2, in which the inscription could be read either clockwise or counterclockwise. Of course, this property would be highly appropriate to a spindle whorl.

Thus, the system of artistic motifs and the system of linguistic signs in the Vinča inscriptions appear to have been completely separate in the minds of those making them. While we have, to be sure, barely scratched the surface in the decipherment of the Vinča script, and counterexamples may well await us, at this point we have a working hypothesis that the two systems were viewed in the minds of the Vinčans as being as separate as, let us say, an illustration of a caduceus and the inscription *Ερμής* ‘Hermes’ would have been in the minds of the Greeks.

This compartmentalization of artistic motifs and linguistic signs is particularly significant for the logograms themselves. As noted in the earlier paper, the impetus for these signs

certainly appears to have been iconic—the side view of a bear's front claw, the vulva, and the epiphany position associated with the Bird Goddess (as in **Figure 5**). By the time the surviving artifacts were inscribed, the writing system had been far enough along that the signs had lost their artistic significance altogether.

If this hypothesis holds, then, the implication for the dating of the Vinča script is quite profound. The artifacts we so serendipitously possess must have been manufactured at a time after the artistic motifs and the linguistic signs had firmly gone their separate ways. To have extended throughout the region in which the Vinča inscriptions are found—whether this distinction had been established before the spread of writing or after it—the script must have been in use considerably earlier than the artifacts we have.

As the initial determination that the Vinča script was indeed writing that could be deciphered (limited as the decipherment may yet be) pushed the inception of written language back from an earliest date around 3500 BCE in Sumer to the fifth millennium in southeastern Europe, the strict compartmentalization of the artistic motifs and the written signs indicates that the writing must be older still.

Finally, it has been reported in the *LACUS Forum* (Griffen 2005) that the impetus for ogam script in northwestern Europe could be traced back to artistic motifs found in Britain and Ireland and dating from the Neolithic. Taking the ogam evidence together with the Vinčan, we may well wonder if the concept of writing could in fact be far older, and far more extensive than we have previously believed. Perhaps writing is not so unnatural an act as linguists have assumed.

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THE PERSONIFIED LOVE OF THE TROUBADOURS: A QUANTITATIVE HISTORICAL SEMANTICS

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THE WESTERN CONCEPT OF ROMANTIC LOVE, a key component in the Western psyche and a major topic of its literature for the last eight hundred years, is widely believed to have originated in the 12th–13th century song repertoire of the Provençal troubadours. It was identified by Zoltan Kövecses as an “emotion concept,” an element of culture relating to emotion created primarily by symbolic means (Kövecses 1986, 1988, 1990, 2000 *passim*). Understanding how the troubadours went about this act of creation would thus be essential to understanding the early stages in the origin of a key element of modern Western culture.

The 360 or so known troubadours, all of whom flourished between 1100 and 1300, have left us a body over 2500 song lyrics written in what is today usually called the Old Occitan language, a poetic koiné whose use extended beyond its native Midi to Catalonia and Italy. Their primary literary invention was the *canço*, or love song, within whose verses they forged a new concept of romantic love, *amors*, by means of a variety of literary devices, the most important of which was metaphor. A central device in their metaphorical arsenal was personification, whereby *amors* was given the attributes of a person (Jeanroy 1934, Schnell 1985); *amors* thus could think, speak, move, and otherwise interact with human beings, much the way a god did in antiquity, such as the god Cupid whose alternate name was “Amor.” This metaphorical mechanism allowed them to construct an abstract entity with a rich set of attributes drawn from human experience and assign to this entity a central role in human existence. Personification of this sort has often played a role in the genesis of religious systems; the result of their efforts is, in fact, sometimes referred to as “the troubadour love-religion,” which was to have an enormous impact on the Western world-view.

What happens grammatically in personification is that a form denoting an abstract concept is used as the subject of a predicate which requires an animate subject, thus implying animacy in the concept. Repeated application of this process amounts to a form of “character development” for abstract concepts. This explains very well what the troubadours did for the concept attached to the word *amors*. The form *amors* is the nominative singular, and thus the form that would occur when the word is used as a subject. It is identical to the vocative, and there is a homophonous accusative plural form.

The research described in the paper which follows consisted of an examination of all 2023 instances of the predicates of *amors* occurring in the troubadour lyric corpus that were produced by troubadours whose generation can at least be estimated.¹ It was very much facilitated

¹ There were actually 2334 predications of *amors* in the complete corpus, but 311 were by undated troubadours. Some occurrences of *amors* turned out not to have predicates; these included

by the recent availability of the *Concordance of Medieval Occitan*, a searchable database of all known troubadour songs.² Every instance of the word *amors* was extracted along with its context, and all predicates occurring with it were identified as representing individual instances of predication. All such predications were assigned to a limited number of semantic categories, and then coded for these categories and for one of six generations to which the troubadour who created the predication has been assigned. It was then possible to sort for generation and semantic category, producing a profile of change in the relative frequency of different semantic categories used as predicates of *amors* over time. The resulting profiles represent all known instances of the phenomenon being studied, and thus are of a reliability higher than could have been achieved if statistical sampling had been employed.

The generation scheme used was the six-generation adopted by the *Bibliografia Elettronica dei Trovatori*.³

1st	before 1150
2nd	1150–1175
3rd	1170–1210
4th	1190–1235
5th	1230–1265
6th	after 1260

This overlapping scheme was designed to keep together troubadours who were contemporary with respect to the years of their primary literary productivity.⁴ The small number of troubadours whose generation is unknown were left out of the study.

Semantic categories were then devised based upon an over-all examination of the data. All but eleven percent of active predicates fell neatly into 26 categories.⁵ They are given below with examples of common verbs found in each:

vocatives, objects of prepositions, predicate nominatives, citation forms, accusative plurals, and erroneous accusative singulars, in order of frequency. These were eliminated at an early stage of the analysis.

² An earlier study, performed without the aid of the *Concordance*, was very much a pilot for the present one and focussed on one important troubadour, Bernart de Ventadorn (Hagman 2004). The narrower scope of this article made it possible to illustrate the metaphors with example passages, something not practicable here.

³ This scheme, based upon the work of Roncaglia, is similar to other schemes familiar to troubadour scholars, though there are some differences in the starting and ending dates of the generations.

⁴ Troubadours were assigned to generations based on the *Bibliografia Elettronica dei Trovatori*, as updated to February 2006. A few questionable assignments of troubadours to generations were accepted as probable, but since such troubadours tended to be represented by few songs, errors resulting from assignments which might later prove to be in error were not expected to have significant impact on the results. A few troubadours who were listed as bridging two generations were arbitrarily assigned to the later generation.

⁵ Some of these predications were passives, others used auxiliary verbs that complicated the semantics and made assignment difficult, and some were just unique. To preserve clarity in the study,

assault	<i>asalhir, batre, ferir, guerrear, nafiar</i>
break	<i>franher, pejuar, rompre, venir a fin</i>
burn	<i>abrandar, ardre, encendre, fondre, recalivar</i>
choose	<i>cauzir, colhir, elegir, triar</i>
conquer	<i>conquerer, prendre, sobrar, venser</i>
deceive	<i>enganar, faire ginhos, galiar, trichar</i>
err	<i>aver tort, eser mal, faire falhensa, faire mal, pecar</i>
give	<i>autrejar, donar, redre, gazardonar, tolre</i>
grow	<i>broilhar, comensar, creiser, florar, naiser</i>
help	<i>ajudar, defendre, enansar, faire ben, gardar, servir</i>
improve	<i>escazer, falhir, sofranher, tanher</i>
joy	<i>agensar, alegrar, donar joi, plazer, tener gai, tener joios</i>
kill	<i>aucire, morir</i>
lead	<i>aduire, atraire, capdelar, guidar, menar, traire</i>
love	<i>enamorar, eser coral, tener car</i>
move	<i>anar, descendre, fugir, intrar, laisar, partir, segre</i>
nourish	<i>apaisar, noirir, paiser</i>
place	<i>metre, paubar, tirar</i>
power	<i>aver poder, destrenher, forsar, prendre, renhar, tener</i>
raise/lower	<i>asolar, levar, pojar</i>
speak	<i>consentir, dire, mandar, plaidar, prometre, somonir</i>
suffer	<i>donar dolor, eser dur, greujar, penar, tormentar, trebalhar</i>
think/know	<i>atendre, cuidar, ensenhar, mostrar, saber, trobar</i>
tie	<i>aliamar, aturar, encadenar, enliamar, lasar, liar</i>
value	<i>valer, onrar, tener pro, eser bon, mostrar vertut</i>
want	<i>aver talen, donar dezir, eser voler, voler</i>

Since the focus was on the type of metaphor implied, in some cases positive and negative values were included in the same category, e.g., “good” and “bad” under “value.” A few categories are inherently causative, e.g., “joy,” “love,” and “suffer” refer to the causation of these states. Power predicates refer to the exertion of power. Incidentally, for non-cognitive transitive verbs, the object is in most cases the first person singular pronoun, due to the nature of this poetic genre.

For purposes of comparison, it will prove helpful to group these semantic categories into a smaller number of metaphor types:

Aggression	conquer, assault, kill
Power	(exert) power, lead, tie
Choice and Desire	choose, want

these problematic cases were not assigned to any of the semantic categories. It is interesting that in Generation I, 10% of predications were of unique semantic categories, while in all other generations the percentage was close to 5%. This would seem to indicate a less focussed meaning for *amors* in Generation II.

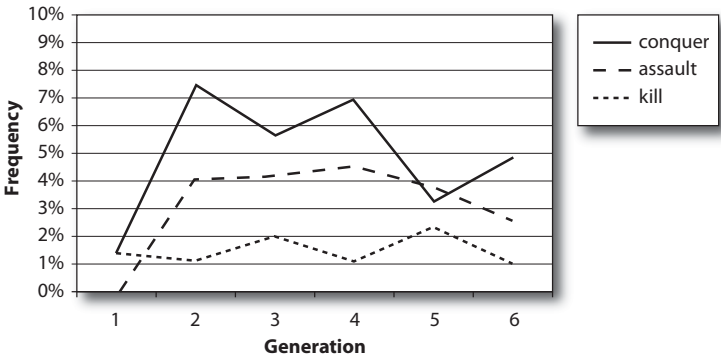


Figure 1. Aggression.

Stress	suffer, burn
Benefit	help, give, improve, nourish
Judgment	value, err, deceive
Joy and Love	(cause) joy, (cause) love
Change	move, place, break, grow, raise/lower
Cognition	think/know, speak

The auxiliary verb *poder* ‘be able’ will be discussed in connection with the power metaphor type, though its semantic subordination to the sense of the main verb with which it occurs makes its power implications weaker.

The results of the analysis will now be presented in a series of graphs, with the horizontal axis representing the generation of the troubadour who made the predication and the vertical axis representing the frequency of the semantic category among all predications of the word *amors* occurring in all known lyric texts from that generation. Thus, though the total number of predications may vary greatly from generation to generation in rough proportion to the total number of known texts, it is possible by this means to get a number which represents the relative frequency of use of each semantic category within each generation and therefore its relative importance.⁶

⁶ The number of instances varies greatly from one generation to the next, but this had more to do with fluctuation in the number of texts than in frequency of usage. Here is the number of *amors* predications found in each: Generation 1, 71; Generation 2, 174; Generation 3, 763; Generation 4, 531; Generation 5, 216; and Generation 6, 268. Paden has argued (2005:165) that we should be careful not to draw conclusions when we have too small a number of occurrences of a particular item, and he employs the chi square test to test for statistical significance. I would argue that this test is only appropriate when sampling has been employed, not when one has studied every instance in an entire population. When a component of a certain population has been defined by certain parameters, for example, all conquest metaphors in Generation 1, this is not a sample, but a sub-population. Conclusions drawn from this collection of instances have a 100% probability of representing this sub-population accurately. In concrete terms, even if we find zero assault metaphors in Generation 1,

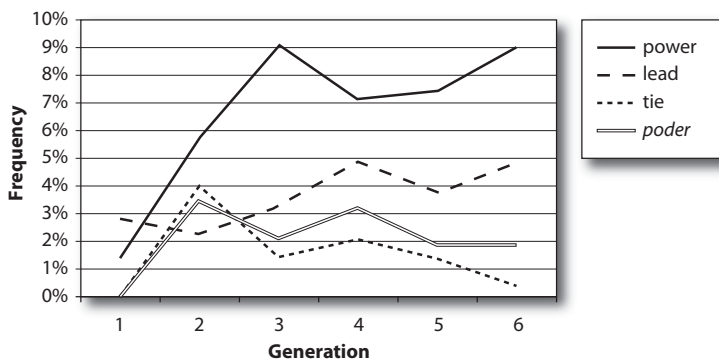


Figure 2. Power.

Figure 1 represents the metaphors of aggression. The most striking pattern here is the rapid increase in the use of such metaphors between Generation 1 and Generation 2. The assault metaphor was non-existent and the conquer metaphor quite rare in the first generation, but very common thereafter. The kill metaphor shows no such pattern, being used consistently at a low level throughout. We see here clearly that the relatively harmless *amors* of the earliest troubadours suddenly takes on a very threatening aspect in the second generation.

Figure 2 represents metaphors of power, including the auxiliary verb *poder*. The most striking feature here is the dramatic increase in power metaphors over the first two generations, a high level being maintained after this point. A more modest increase is experienced by the lead metaphors up to Generation 3. The tie metaphor peaks in Generation 2. What happens here with metaphors of power mirrors quite well the increase in those of conquest and assault, i.e., the powerless *amors* of the first generation progressively becomes a more powerful entity, this time increasing in a more protracted fashion and to a higher level.

Figure 3 (overleaf) represents metaphors of choice and desire. Once again, the difference between the first and all subsequent generations is the most striking pattern, with the usage of metaphors of wanting virtually replacing those of choosing. To the troubadours who founded the movement, *amors* was an entity that selected its object, but by the next generation, the more emotional concept of desire replaces the more intellectual concept of choice.

A quite different pattern appears in Figure 4 (overleaf) representing stress metaphors. Both suffer and burn show rapid decreases from the first to second generation, with a slow recovery thereafter. The level of suffering is generally lower between Generation 2 and Generation 4, and then peaks in Generation 5. We can assume that during all periods *amors* was looked upon as an entity responsible for causing suffering.

this is a very significant fact, since it would make this type of metaphor likely to have been an innovation of Generation 2. Admittedly, we do not have all the songs written in that generation, but the ones we do have were the ones thought to be worth preserving and thus the ones with greatest impact on subsequent generations, so they are of unusual importance.

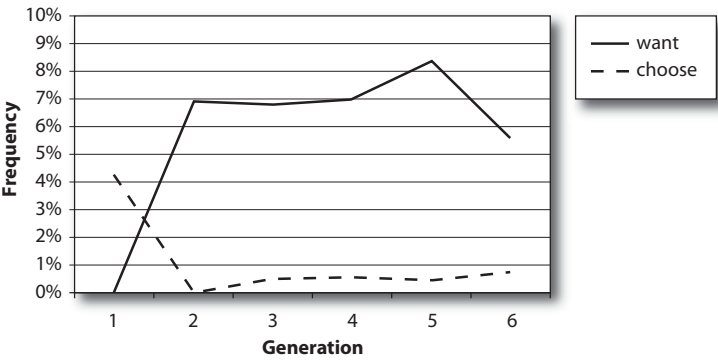


Figure 3. Choice and desire.

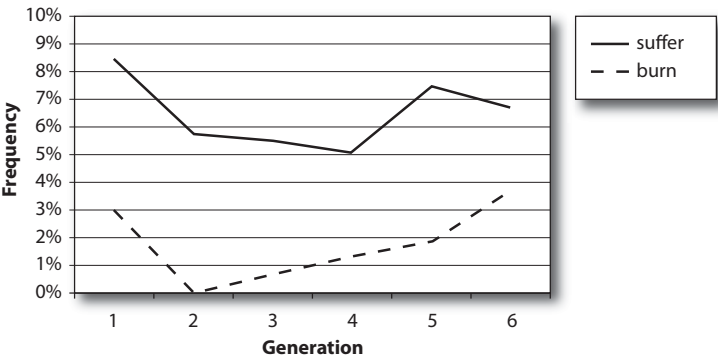


Figure 4. Stress.

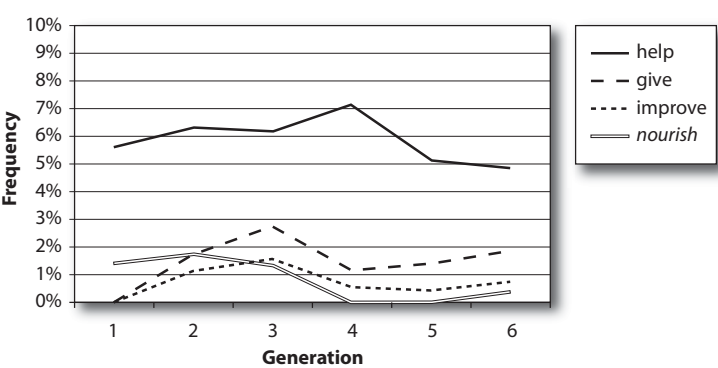


Figure 5. Benefit.

Figure 5 represents metaphors of benefit. This graph shows no striking patterns of change, despite the variety of categories included. Note that there is some drop in help metaphors between Generation 4 and 5, while a peak in give metaphors occurs in Generation 3.

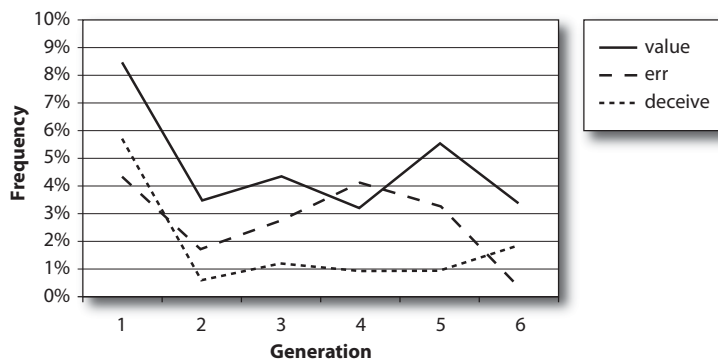


Figure 6. Judgment.

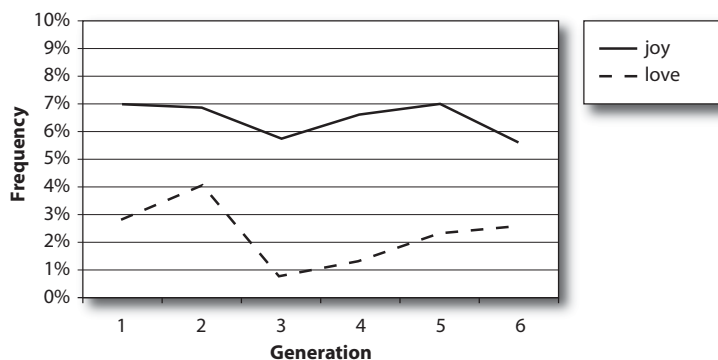


Figure 7. Joy and love.

Metaphors of judgment show a unique pattern of their own, as can be seen in **Figure 6**. These represent a judgment being made of *amors*: as being either good or bad in the case of value, as being in error, or as being deceitful. In some cases *amors* is the one making the judgment. All of these drop significantly between Generations 1 and 2, and then again between Generations 5 and 6 after a recovery. This shows that troubadours of the founding generation were far more willing to pass judgment on *amors* than were those of following generations, and those of the last generation were least willing of all.

The metaphors of joy and love are shown in **Figure 7**. Those of joy exhibit a pattern of change much like that of the help metaphors in the benefit type: there is a consistently high level in all periods. The sudden drop in usage of the redundant metaphor of “love causing love” occurs after Generation 2.

With regard to the metaphors of change depicted in **Figure 8** (overleaf), the sudden drop in usage of the break metaphor, so popular in the first two generations is striking, as is the decline over two generations of the movement metaphors. There is also a gradual rise in the use of some new change metaphors after Generation 2. Two of the strangest features on this chart are the very low popularity of change metaphors in general in Generation 4, and then the sudden peaking of movement metaphors in Generation 5. The best generalization

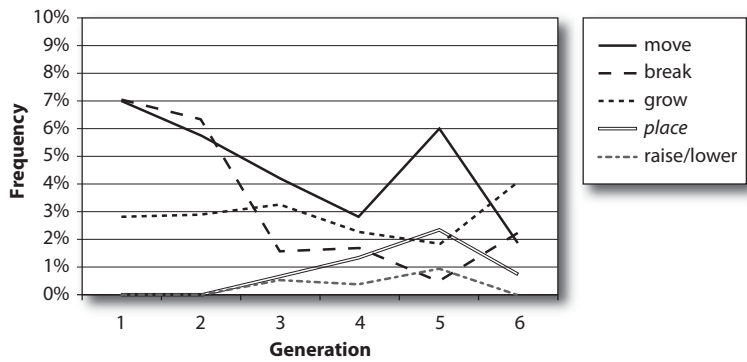


Figure 8. Change.

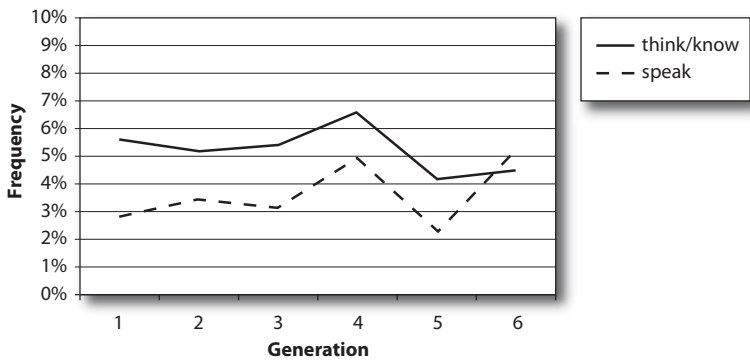


Figure 9. Cognition.

we can make regarding these patterns is that, for the first two generations, *amors* was considered an unstable and capricious character; by Generation 4, it had been reconstituted as stable and reliable, with some return to instability after that.

The cognition metaphors in **Figure 9** refer to the ability of *amors* to think and communicate. There is a general rise in these over the first four generations, with a sudden drop in Generation 5, and a recovery in Generation 6. The growing popularity of debate poems with *amors* as one of the participants is no doubt responsible for this. What all this says about *amors* is that the relatively unintelligent *amors* of the first generation is replaced by an increasing intelligent and communicative character, a trend which reaches its peak in Generation 4.

Figure 10 represents the auxiliary verbs found as predicates of *amors*. The one pattern that draws all our attention in this chart is that of the verb *faire*, used with other verbs to express causation. While the other auxiliary verbs fluctuate at relatively low levels, *faire* begins with a high level of usage and continues to climb to unprecedented levels (note that the scale of this chart is double the preceding). This increase in the use of *faire* could be partially a grammatical phenomenon, viz., the growth of a periphrastic causative used to replace inherently causative verbs, a trend for which there is some evidence. However, the

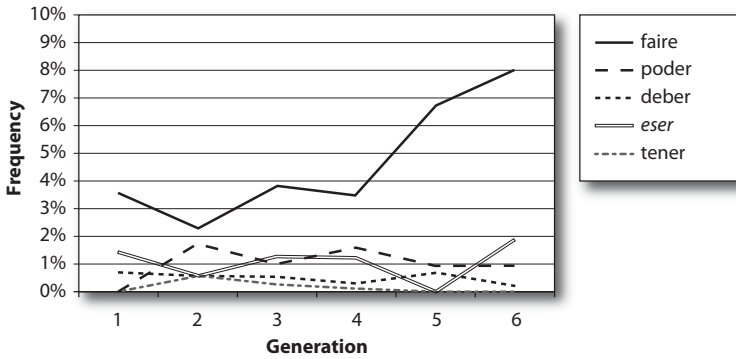


Figure 10. Auxiliary verbs.

increase is so dramatic that it is likely that *amors* is being given an increasingly causative role throughout the period, in conformity with the increase in power metaphors described earlier. It would be consistent with this to propose that *amors* is being given responsibility for causing an increasing number of human actions. In other words, individual will is giving way to causation by an external agent of growing power, a trend which never seems to reverse.

When we consider all of the preceding evidence, the first conclusion that comes to mind is that it would be pointless to try to generalize about the concept of *amors* in the works of the troubadours. The actions predicated of *amors* differ so much from generation to generation that we must see it as an evolving, rather than as a static, concept. The *amors* of Generation 1 is a relatively powerless and unaggressive being that causes much suffering among those it chooses, but is capricious and deceitful. The *amors* of Generation 2, on the other hand, is a very aggressive and increasingly powerful being that causes more joy than suffering, and is relatively honest. The *amors* of Generation 3 is at the peak of its power, though less aggressive and capricious. The *amors* of Generation 4 regains the aggression and power of Generation 2, and reaches its cognitive peak, and is more stable than at any other period. In Generation 5, *amors* is afflicted by desire, suffering, and instability, has a tendency to be judged, is somewhat less intelligent, and much less likely to engage in conquest. In Generation 6 *amors* recovers many of the traits of Generation 3, is as powerful as ever and less prone to error, but also less likely to cause joy than in any other period.

There are two dramatic transitions here: the first is the development of a new aggressive and powerful love concept by the troubadours of Generation 2, which then continues to grow in these qualities for two generations; the second is the sudden weakening and instability of the concept in Generation 5, with only a moderate recovery in the following generation.

It would be appropriate here to speculate on possible correlations between these transitions and events that were occurring in Occitania at the time. The first transition corresponds with the growth of the Crusader movement, and with successes in the re-conquest of Spain and the Middle East. It was a period of rampant and profitable militarism, a period that glorified aggression and conquest. It is perhaps no coincidence that the new "love god"

of the troubadours should be a warrior god, whose central function was to conquer and control its subjects. The second transition coincides with the period following the conquest of Occitania by France through the very protracted and bloody war known as the Albigensian Crusade. The nobility of the region, once among the most prominent leaders of the Crusades, now became the victims of a crusade themselves, and the artistic tradition of the troubadours that had so flourished under their support now had to struggle for its existence and export itself to neighbouring countries. For troubadours of this period, conquest was something one did not like to mention, and their love god became more vacillating and unstable, afflicted with desire and more dubious morals. The feelings of joy and benefit, so strong at the time of its original creation, had also somewhat faded. One might say that the boisterous young warrior god had by then become a disillusioned old soldier.

However disillusioned the troubadours' love god had become, they made him immortal and he has lost none of his power after these eight hundred years. Our quasi-mystical romantic love concept was something unknown to the ancients and is still incomprehensible to many other cultures. Yet today few people in the West would doubt the power of love between the sexes. In the end, though, what all this shows us is that poetic devices can do much more than just create pleasing images—they can create gods.

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TRANSITIVITY AND EXPOSITORY DISCOURSE

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TRANSITIVITY IN GRAMMAR AND DISCOURSE has been widely studied since the late 1970s.¹ Hopper and Thompson (1980) view transitivity as a global property of the entire clause with multiple features deriving from the verb and its co-occurring nouns. It is not simply an issue of the presence or absence of an object. Their claim that high transitivity is tied to foreground information in discourse, rather than supportive background information, has been supported by subsequent research results. Cumming and Ono (1997) refer to high transitivity as discourse transitivity, since it goes beyond the commonly defined concept of transitivity and marks the foreground information in discourse.

This paper deals with discourse transitivity in relation to expository discourse, whose purpose is to explain. The correlation of high transitivity and foreground information is generally borne out in narrative discourse, where high transitivity marks information of high salience on the event line. The fact, for example, that a person knocks down or injures another person is more salient to the hearer of the story than the fact that some people are kind or violent in character. On the other hand, in an expository discourse dealing with personal characteristics of people in general, the more salient fact might be the kind versus violent character of some people. The findings in this paper cause us to reexamine the concept of foreground (cf. Dry 1992). Does it refer to the information that reports the events on a timeline? Or does it refer to the information which is on the mainline of a given discourse type (as in Aaron 1999)? Mainline information reports the mainline of development as against other supportive material. It varies by discourse type. While narrative discourse has events as its mainline, procedural discourse has procedures or steps, hortatory discourse has exhortations, and expository discourse has explanations and descriptions of salient themes. The term foreground may refer to events in narrative, or to the mainline in each type of discourse. The first is a narrower definition, perhaps applicable to narrative discourse only, while the second is broader, in which foreground information and its transitivity marking may vary according to discourse type.²

This paper examines the component features of transitivity in expository texts, by analyzing sample expository texts. It addresses the connection between discourse transitivity and mainline information in expository discourse, and shows that high transitivity features of clauses do not correlate with the salient, mainline information in expository discourse. Rather, clauses with low transitivity show a better correlation.

¹ I am very grateful to Michael Boutin, Bob Dooley, and Marlin Leaders for their valuable comments.

² To avoid confusion, in this paper we use the term mainline, which is applicable to all discourse types, and use the term foreground when it is closely tied to other researchers' usage.

1. DISCOURSE TRANSITIVITY. We first present the ten transitivity features isolated in Hopper-Thompson's (1980:252) study. These features are related to the verb (action and telic with end point), subject (agency), object (affected patient), and the overall clause structure. There are two or more participants or one participant, action or non-action, telic or atelic aspect, punctual or non-punctual, volitional or non-volitional, affirmative or negative, realis or irrealis mode, agent (A) high in potency or low, patient/object (O) totally affected or not, and O highly individuated or not.

Individuation includes such factors as human, animate, concrete, singular, count, referential, and definite, so that a participant high in individuation is likely to be involved in the foreground or event line in narrative discourse.

Cumming and Ono (1997) show how in Tongan three features of a clause—perfective aspect, two arguments, and affected object—converge together by the transitive suffix *-ʔ* in a prototypical transitive clause. The verbal suffix *-ʔ* occurs in the clause for 'The man buried the fish,' but not for 'The man was typing the letter,' although the latter also has an object and therefore might be called a transitive clause. The suffix marks the clause as being perfective with an affected object which is foregrounded in the narrative.

An additional question is whether the discourse transitivity reveals a binary division between foreground and background (Hopper & Thompson 1980) or multiple bands of information salience (Longacre 1996). Koehn (1999), in his statistical study of verbal morphology in twenty Hellenistic Greek narrative texts from the New Testament, has found a spectrum of four bands (storyline, background, flashback, and setting) rather than a binary distinction.

2. TRANSITIVITY IN EXPOSITORY DISCOURSE. A short expository text from Jones (1977:228) in (1) displays low transitivity (t-)values in its twelve clauses, as shown on the right.³ Only three features are found in the text, i.e., two participants (Pa), affirmative (Af), and realis (Re), and only one clause, 2a, has the value of 3. The average value per clause is 1.5.

- (1) 1 *Natural science does not in itself **provide** a cosmology.* 2 (Pa, Re)
 2a *It **has** congruence or consonance with modern Western cosmologies;* 3 (Pa, Af, Re)
 b *it **has** not to the same degree consonance with others.* 2 (Pa, Re)
 3a {If, for instance, you **are** an Eastern mystic 1 (Af)
 for whom the body **is** a complete illusion},
 b you will no doubt have to **feed** that illusion with a minimum of 2 (Pa, Af)
 food and drink
 c but you will not **make** yourself an expert on human physiology. 1 (Pa)
 4a You cannot, however, **get** from science an answer to the question, 1 (Pa)
 b "**Is** the human body an illusion?" 1 (Af)
 c not even to the question, "**Is** it better, as most of us do in the West, 1 (Af)
 to consider the human body a real thing
 d or **is** it better to consider it an illusion?" 1 (Af)

³ Adverbial clauses are set in curly brackets, and complement clauses and quotations in angle brackets. Verbs are in boldface, and thematic, mainline clauses are in italics.

- 5a In brief, *the pursuit of scientific knowledge may well be* 1 (Af)
a part of our Western values;
 b *it cannot possibly make our Western values.* 2 (Pa, Af)

In all five one-participant clauses, only the copula *be* is used: three times with predicate nominals (*is a complete illusion*) and twice with predicate adjectives (*is better*). There are seven two-participant clauses, used with the verbs such as *get*, *have*, *make*, *provide*, and *feed*. The verb *have*, although transitive, has long been recognized as stative, rather than action oriented. The subjects and objects are abstract concepts rather than human or animate.

All of the clauses in the text are very low in transitivity. There are no volitional agents, actions, telic aspects, or punctual events. The subject *you* in Sentences 3–4 is generic and impersonal. The object, when it occurs, is not affected or individuated with definite or referential features. The verb is in timeless present tense, sometimes with modals and irrealis interpretation. The five clauses for the thematic mainline information (highlighted in italics) have an average value of 2, slightly higher than the average for all clauses but still very low. Four of these five clauses are grammatically transitive with two participants, which causes the value slightly higher than the total.

Let us look at another expository text, *How Love Heals* (by Dean Ornish from *The Reader's Digest*, July 1998). The main expository section has 19 sentences, which are broken down into 40 clauses for analysis. The text has an embedded narrative section following Sentence 10, which is analyzed separately in Section 3 below. The text in (2) displays only the first ten sentences before the embedded narrative section, due to space limitation.

(2) *How Love Heals*

- 1a "I ask virtually every patient I see,"
 b says Dr. Harvey Zarren, a cardiologist in Lynn, Mass.,
 c "'With whom do you share your feelings?'"
 2a They look at me
 b {like I'm from outer space}.
 3a But {when people feel loved},
 b *things happen in their body's physiology [that encourage healing].*
 4 It's just amazing to watch."
 5a My work with cardiac patients over the past 20 years has convinced me
 b *<that love and intimacy are at the root of health and illness>.*
 6a {If a new drug had the same impact,}
 b virtually every doctor in the country would be recommending it for his patients.
 7 It would be malpractice not to prescribe it.
 8 Yet with few exceptions we doctors don't learn much in our medical training
 about *the healing power of love.*
 9a It may be hard to believe
 b *<that something as simple as talking with friends, feeling close to your parents or sharing thoughts openly can make such a powerful difference in your health>.*
 10a But many studies document
 b *<that these things do>.*

	All Clauses (N=40)	MainCl (N=19)	In/direct Quotes (N=21)	CompCl (N=16)
Total	106	55	52	42
Average t-value	2.6	2.89	2.48	2.63
Mainline clauses	N=11	N=2	N=8	N=8
Total	23	5	17	17
Average t-value	2.1	2.5	2.1	2.1

Table 1. T-values in How Love Heals.

The clauses with speech or interactional verbs, such as *ask, say, share, look at, recommend*, are the only ones that have 5 or more points on the scale, and the rest are 1–3, again with the same three features found in the text in (1): two participants (objects are often inanimate or abstract, as in *make such a powerful difference* (9b in (2)), affirmative, and realis. Speech verbs have additional features of action, volition, and agency, which add to the number of points, but they are in timeless present tense rather than in past tense as in narrative. The telic feature of aspect occurs in present perfect form, as in *has convinced me* (5a). The clauses on the mainline of the text have 1–3 in t-values, e.g., (5b) *love and intimacy are at the root of health and illness* (value 2 with affirmative and realis), (3a–b) *when people feel loved, things happen in their body’s physiology that encourage healing* (both subordinate and main clauses have 2 points with affirmative and realis). The verb *happen* indicates a process, and not an action by a volitional agent. Sentences 6–7 involve irrealis, signaled by *would* and *if*.

Table 1 shows that the average t-value of all 40 clauses is 2.6, while that of the 11 clauses that state the mainline theme about the healing power of love is 2.1 (shaded in the table). Note that the mainline is reported only twice in the main clauses which are almost half of the total number of clauses. More commonly—eight times—it is stated in complement clauses; in fact, half of all complement clauses are on the mainline. The quotes column includes both direct and indirect quotes. This could be further evidence that matrix clauses, such as *I believe*, are often functioning as epistemic and evidential markers even in written texts, not just in conversational texts as reported by Thompson (2002). It is as though the main thesis is encapsulated in complement clauses with the writer’s attitude shown in the main clause verbs such as *believe* and *convinced*.⁴ Overall, we notice that the t-values for all clauses are low.

The next text is an article called *Why Emotion Keeps You Well* (Lodge 2007). Its first section is expository, quite similar to *How Love Heals* in content except that it is addressed to men. The second section is hortatory, with commands and explanations interspersed.⁵ Here we report the result of the analysis of the first section which is expository. It consists

⁴ Following Thompson and Hopper (2001), I counted adverbial and complement clauses as separate clauses, but, unlike them, didn’t count relative clauses as separate clauses, since most of them were the restrictive type. Complement clauses, although separate clauses, are not counted as a participant of the matrix clause, following their new practice in 2001, changed from 1980.

⁵ The text structure is quite similar to the New Testament book of Ephesians, whose first three chapters form an expository text, while the last three a hortatory text, exhorting us how to live or behave based on the first section.

of 27 sentences, divided into 42 clauses. The average t-value is 2.19 for these 42 clauses. Six clauses have a t-value of 1 (e.g., *Emotion is not nature's afterthought*), and five have the highest value of 4 in this text (e.g., *Men have gone down a weird and perilous road in our society*). The copula *be* is found in 18 clauses; 11 of these are equative clauses with predicate nominals (e.g., *independence is the male ideal*), six are with predicate adjectives (e.g., *your life will be better and longer*), and one with a predicate locative (e.g., *emotion is at the physical center of our brains*). An additional five clauses contain *be* in a passive construction, and their t-values are very low (1 or 2) with only one clause having a t-value of 3. Thus, 23 out of 42 clauses, more than one half, have a copula and very low t-values, and they convey descriptive and stative information.

The clauses in all three expository texts have low t-values with the average of 1.5, 2.6, and 2.19 respectively. A slightly higher average in the second text is primarily due to the speech and interactional verbs that are used with direct and indirect quotations. Most verbs are in present tense (*says, ask*), but a few verbs are in present perfect (*has demonstrated*), reflecting a telic aspect.

3. TRANSITIVITY IN NARRATIVE DISCOURSE. To compare the transitivity values of expository discourse with narrative discourse, we first present the analysis of the embedded narrative section of *How Love Heals*. The studies that document the healing power of love are each a mini embedded narrative text. They are given in summary fashion and may differ from typical narratives. Clauses in the embedded narratives have a t-value as high as 7 with two participants, action, telic, volition, affirmative, realis, and agency. However, the average is generally low due to the occurrence of stative verbs, such as *be* and *have*. As a representative, two sentences reporting on the first study follow: (1) *Scientists at the University of California, Berkeley, studied 110 men and 40 women who were undergoing coronary angiography.* (2) *Those who felt the most loved and supported had substantially less blockage in the arteries of their hearts.*

Only 22 clauses occur in the embedded narratives. The average t-value is 3.91, which is higher than the average t-value of 2.6 found in the main expository section (see **Table 2**, overleaf). Both sections have a high percentage of one-participant clauses (67% in expository, and 59% in narrative). When we compare the two sections, we find significant differences in kinesis, aspect, and volitionality (marked in italics). These are considerably higher in the narrative part, as expected, e.g., 77% telic aspect. In both, affirmation and realis are very high, and no clause is punctual or has an affected object.

Next, in (3), we look at the prepeak episode from *Hans* (Gee 1955), a short story about a poor beggar boy. The episode is action-packed, and 12 out of 18 clauses report mainline events.

(3) *Hans*: Prepeak Episode

Suddenly a little girl left her mother as she came up the steps, ran towards him (all loveliness as she smiled) and thrust a big rosy apple into his hands. "That's for you, little boy," she said.

	Expository (N=40)	Narrative (N=22)
Two participants	13 (33%)	9 (41%)
<i>Kinesis: action</i>	6 (15%)	9 (41%)
<i>Aspect: telic</i>	2 (5%)	17 (77%)
Punctuality	0	0
<i>Volitionality</i>	6 (15%)	6 (27%)
Affirmation	37 (92.5%)	21 (95%)
Mode: realis	33 (80%)	20 (91%)
Agency	6 (15%)	4 (18%)
Affected O	0	0
Individuated O	2 (5%)	0
Avg. t-value	2.6	3.91

Table 2. *T-values in expository and narrative sections of How Love Heals.*

Then she and her mother went in at the great west door, and Hans stared at the apple. He thought at first he would eat it there and then, but he wanted to keep it for a time, so he held it in his hands, and went timidly to the door of the cathedral. Most of the folk were in, and the service had begun. No one turned him away. He plucked up his courage and crept inside, slinking into a pew at the back.

The average t-value of the 18 clauses is 5.83, and that of the mainline clauses is 6.7. Six clauses contain two participants, and most of the clauses display high values, except for the last three features of punctuality, affectedness and individuation of the object. Only two verbs are semantically punctual (*left* and *thrust*), and the other two features relate to the object and can only apply to the six clauses with two participants.

The story continues with Hans agonizing at the offering time without money and finally giving the apple, the only thing he has, which turns into gold (see Hwang 2005 for the full text). **Table 3** shows that the average t-values of the clauses vary according to different discourse slots. The values are highest in prepeak and postpeak episodes where the actions are reported.⁶

The stage portion of the discourse presents characters in their original state and is thus descriptive and stative in nature. Often an expository discourse type is embedded in that section, so it is not surprising to see a low t-value. But what about the peak episode? This is where anomalous surface structure features typically occur to mark a high tension point of climax or denouement in a story.⁷ In *Hans*, peak includes no mainline clauses but instead

⁶ An exception is made in the postpeak episode by counting two nonrestrictive relative clauses in S29 as separate clauses, which report subsequent actions of the usher and the priest.

⁷ Longacre (1996) presents peak-marking features found in many languages, such as rhetorical underlining, crowded stage, and a shift in person and/or tense. Peak may be packed with events or may not have any, or the stage may be crowded or empty with only one participant. Peak displays

	Sent. #	Clause #	Avg. t-value in all clauses	Mainline Cl #	Avg. t-value in mainline clauses
Stage	6	13	2.8	0	0
Prepeak episode	7	18	5.8	12	6.7
Peak episode	12	18	2.3	0	0
Postpeak episode	4	10	4.5	5	7.4
Closure	3	4	3.3	2	4
Total	32	64	3.8	19	6.6

Table 3. Average *t*-values of clauses according to discourse slots

has several negatives and questions, which are not typical of stories, and also modal forms such as *could* and *would*.

For mainline clauses (19 total), the average *t*-value is 6.6, which is similar to that of the prepeak episode. We thus conclude that the mainline clauses in narrative have a considerably higher *t*-value average than that of expository mainline clauses: 6.6 vs. 2.

An overall summary comparison of our texts shows that expository texts ($N=94$ clauses) display an average *t*-value of 2.34 (or 2 in mainline clauses), and narrative texts ($N=86$) display an average of 3.8 (or 6.6 in mainline clauses in *Hans*).

4. TRANSITIVITY, FOREGROUND, AND DISCOURSE TYPES. In their 1980 paper, Hopper and Thompson claim a correlation of high transitivity sentences with foregrounding in discourse. They present two defining characteristics of foregrounded clauses: (1) “the foregrounded portions together comprise the backbone or skeleton of the text, forming its basic structure; the backgrounded clauses put flesh on the skeleton, but are extraneous to its structural coherence” (281); and (2) they “typically recount sequences of events which mimic the chronological order of those events, as they are supposed to have occurred” (286). These foregrounded clauses could be considered the mainline in narrative discourse, but what about other discourse types? They comment on grounding and discourse genres: “It is reasonable to assume that the grammaticization of devices to indicate grounding in narrative begins in the more pervasive conversational genre and is extended to other genres in a natural way; i.e., the same devices used to highlight the main points of a conversation are also appropriate in foregrounded parts of a narrative” (283). They also state how such an extension is quite natural for procedural discourse but they make no mention of expository or hortatory discourse types with regard to grounding.

While their 1980 study has been extremely influential for subsequent studies to uncover the intricacies in morphosyntax and semantics of clause structure (Hopper & Thompson 1982, Tomlin 1987, Khalil 2000, Kulikov, Malchukov & de Swart 2006), the use of the term foreground has not been uniform. Dry (1992) points out how the term refers to importance (thematic, human, causal, and formal), or to salience (from unexpectedness,

turbulence, a break from the norm in its grammatical features as compared with other parts of discourse.

figural properties, and cognitive accessibility), or to both as a cluster concept. The term has also been used to refer to mainline information in narrative, or more broadly to mainline information in all types of discourse as in Aaron (1999). In his study, foreground correlates with high transitivity clauses or low transitivity depending on the text type. The nature of grounding has also been debated, whether it is binary (foreground vs. background) as originally presented, or scalar.⁸

In their later study, however, Thompson and Hopper (2001) report that conversation in English is very low in transitivity. They note that our everyday conversation is mostly about “how things are from our perspective” and that “we describe states, reveal our attitudes, ascribe properties to people and situations, and give our assessments of situations and behavior” (53). Much of what they describe is expository material, and it is no wonder that their study and the present study find low transitivity in the data.

They also state that even in narratives, high transitivity clauses may not be frequent and are restrictive in their use “for reporting events in a highly non-subjective” (53) and in distancing manner, based on Hopper’s (1997) study on vernacular written narrative. In the story of Hans, we have seen high t-values in the clauses in prepeak and postpeak episodes when the events are reported in a detached manner (5.8 and 4.5 respectively, or 6.7 and 7.4 if only mainline clauses are counted). On the other hand, at peak we hear what Hans is thinking in agony when he has no money at offering time, and the story takes on a subjective perspective. We view things from his perspective, and that is when the average t-value drops down to 2.3, the lowest point in the whole story. It is comparable to the stage (t-value of 2.8), where setting information of expository type appears.

In the texts under study here, t-values are high only in the action-packed episodes of *Hans* narrated in a distancing perspective. All three expository texts display low transitivity with an average of 2.34 (or 2 in mainline clauses). In narrative texts, the average is 3.8 (or 6.6 in mainline clauses). Thus, there is a basic difference between expository and narrative, 2.34 vs. 3.8, for all clauses, but a marked difference among mainline clauses, 2 vs. 6.6. In Biblical Hebrew, Longacre observes that the mainline in expository discourse is reported in nominal (verbless) clauses or participial clauses, which tend to be the most static elements in narrative. He states, “it is as if the narrative scheme were turned on its head” (2003:131).

Hopper and Thompson’s comment in 1980 on the natural extension of grounding from narrative applies only to procedural discourse; both narrative and procedural types have contingent temporal succession. But the extension does not apply to hortatory and expository types, which do not have temporal succession but logical succession as their basis. In these types, the so-called foreground clauses that meet both of their defining criteria may be non-existent, or may be found only in embedded parts of narrative or procedural type. Embedded parts, however, would not form the backbone in the overall, embedding discourse. Those clauses that comprise the backbone will have quite different transitivity features for different discourse types. The backbone or mainline clauses in hortatory texts are

⁸ The scalar approach allows us to posit several degrees of departure from mainline, for example in narrative, ranging from background activities and setting to evaluative and cohesive material (Longacre 1996, Koehn 1999, Hwang 1990).

often indicated by imperative clauses giving explicit exhortation, and the main explanatory material in expository texts is expressed by stative or descriptive clauses. Mainline clauses in

expository discourse thus correlate with low transitivity, rather than with high transitivity.⁹ Contrary to expectations established by a number of studies, we may find that high transitivity is not pervasive across genres and that its correlation with foregrounding is limited to special detached perspectives in narrative and procedural discourses. Different discourse types call for different linguistic features of word order, particles, and tense/aspect/modality. Thus, the scale of transitivity varies according to discourse type.

⁹ DeLancey seeks a correlation of high transitivity with cognitive salience from “an extralinguistic cognitive level” (1987:66), e.g., event (change of state) and cause-effect. His correlation would show a better support from data precisely because events and cause-effect are more crucial in narrative than other types.

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COMMUNICATIVE BEHAVIOR OF A FIVE-YEAR-OLD CHIMPANZEE ON THE VERGE OF A LINGUISTIC BREAKTHROUGH

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Inverted-A, Inc.

DURING THE PERIOD COVERED BY THIS PAPER,¹ Bow² was a five year old male common chimpanzee who had been cross-fostered in a human household since he was a month old. He had a human foster mother and a human sister two-and-a-half years older than he. He had been immersed in human culture and human language. The languages he had been exposed to since infancy were Hebrew (the household language), Chinese (spoken by guests during visits of two months and six months respectively), and English (used as an inter-language with guests in the household as well as with volunteer interns and caretakers who stayed for periods of about three months each). While Chinese had been discarded due to lack of volunteer speakers, Bow was passively competent, for purposes of comprehension, in both English and Hebrew. Hebrew was the language in which he appeared most fluent. All participants except Bow used spoken English and Hebrew as the primary means of communication.

Bow communicated by pointing at printed lexigrams in the standard orthography of the human languages he knew. There was no expectation at this point in the experiment that Bow could understand the phonetic principle. He was to select the written words that corresponded to spoken words he knew based on association alone. Bow had a holistic gestalt of what each lexigram looked like, and he knew which lexigram corresponded to which spoken word in which language. For the time being, English and Hebrew lexigrams were treated no differently from Chinese characters in terms of understanding their subcomponents.

Bow occasionally used three word sentences in SVO patterns, such as "MARY CHASE BOW", or two word combinations such as "MORE BANANA", but the vast majority of his utterances were still on the one word level. Most of Bow's utterances involved requests: for particular foods, for games he wished to play, and for particular toys. He also answered "YES" and "NO" to questions, and much of the communication with him was elicited in this way. As yet, Bow did not ask questions, issue complaints, discuss his feelings, or initiate conversations about long range goals or desires. He expressed preferences only with regard to very concrete options. Bow's performance in this regard was comparable to that

¹ The author wishes to thank Eden Michaelov, without whose help in working with Bow, processing the data, and constructing tables and diagrams, this paper would not have been possible.

² Since July of 2007, when the presentation upon which this article is based was given at Eastern Kentucky University, Bow has made tremendous progress, which will be detailed in future publications. The use of past tense in reference to Bow's accomplishments as described in this paper is due to this fact.

WATER	מים
GRAPES	ענבים
BANANA	בננה

Figure 1. Examples of lexigrams in English and Hebrew.

of other chimpanzees in language experiments. (Segerdahl, Fields & Savage-Rumbaugh 2005; Savage-Rumbaugh *et al.* 1985; Savage-Rumbaugh *et al.* 1993.)

The difficulty in eliciting more elaborate conversational language use from Bow was being addressed by a modified form of DIR/Floortime, a play therapy developed by Dr. Stanley Greenspan. (Greenspan & Wieder 2006). This paper will show how this modified version of floortime expanded Bow’s language use by allowing him to find a way to secure the joint attention of his interlocutors.

1. LEXIGRAMS AND MENUS. The lexigrams that Bow was exposed to consisted of printed words in the standard orthography of the language in question (see **Figure 1**). Bow was not instructed in how the printed words were composed of letters, nor was he given any instruction in how the letters were to be pronounced. The lexigrams were treated as indivisible wholes, to be learned holistically, in much the same way children learn to recognize spoken words without explicit instruction in the phonology of their native language. Sometimes the lexigrams appeared separately, and sometimes they were arranged in menus, where several lexigrams appeared together.

Even when the lexigrams were arranged in menus, Bow had to learn to recognize the individual lexigram, not its position in the menu. Several different arrangements of the same menu were available on hand, and Bow was not allowed to rely on the position of a lexigram relative to other lexigrams in order to identify the lexigram he wished to use.

By July of 2007, Bow had a vocabulary of 137 lexigrams, corresponding to 137 spoken words, in Hebrew. **In Figure 2**, the words are arranged by semantic category.

Bow’s vocabulary in English by the summer of 2007 was considerably larger, coming in at 238 words (see **Figure 3**, overleaf). Despite the greater size of the English vocabulary, Bow more readily expressed himself with Hebrew. In selecting vocabulary, he was more willing to deploy lexigrams in Hebrew than in English.

At first glance, Bow’s greater willingness to use Hebrew lexigrams could not be teased apart from his unwillingness to speak with strangers, since all English speakers he knew were not household members, and almost all Hebrew speakers he knew were household members. However, once Eden Michaelov, who was bilingual in Hebrew and English, entered the picture in June of 2007, she was able to report that Bow preferred to communicate with her in Hebrew. This was due to his own fluency, not Eden’s. She was more fluent in English.

Bow’s human adoptive mother and sister spoke Hebrew in the home. However, the wider community in which the household was embedded was English speaking. Although Bow had been exposed to more words in English than in Hebrew, he was more familiar

People	לפתוח	פה	Colors	Misc.	שגפן
איה	לצאת	רגל	אדום	1	שורות
אלי	לקום	Foods	אדומים	2	שיט
אמא	לקרוא	אפנה	אפור	3	שש
אמי	לקרוץ	אפדסק	אפוד	אביב	שתי
גיל	לשחק	אדוחה	ורוד	אחד כך	אין
דני	לשתות	בננה	חום	את	איפה
חרב	לתת	בשר	ירוק	בבית	אני
יוני	רוצה	גכינה	ירוקים	בבדכה	את
נץ	תן	גזר	כחול	בסדר	אתה
סבתא	Toys	גלידה	כחולים	די	ב
עדן	גרב	דג	כתום	הקידות	הוא
קיץ	דב	דובדבנים	לבן	ועוד	היא
קשת	דגדוג	חלב	סגול	חיב	הנה
שרה	כדור	יוגובט	צבע אחר	ילדות	יש
Verbs	מחבואים	לחם	צהוב	ישן	ל
אכלו	מכונית	מים	צהוב	ישרות	לה
בוא	ספר	מיץ	שחור	כל	לול
בואי	תופסת	עוגה	Potty	כן	לי
לאכול	Body Parts	ענבים	סיר	כסתה	לך
להכנס	אף	שתיה	פיפי	לא	על
לטפס	אצבע	תפוח	צדיך	מדלנה	עם
לישון	יד	אדמה מתוק	קקי	משהו אחר	ש
לנוח	ידיים	תפוח		עוד	שקט
לסגור	עין	תרנגולת		ריח	

Figure 2. Bow's Hebrew vocabulary of 137 words arranged by semantic category.

with his core Hebrew vocabulary than with his core English vocabulary. Much like children brought up bilingually in a home where the parents speak a different language from the people in the surrounding community, Bow had a better command of simple domestic vocabulary in Hebrew, although he had been exposed to many more speakers of English, each of whom introduced him to new words and new concepts.

2. METHOD OF SELECTING LEXIGRAMS. Bow selected which lexigram he wished to use by pointing to it. Over the course of the experiment, the following methods of pointing emerged:

1. **Open-handed Point (OHP)** – Bow used his own hand to point at the lexigram. The hand was in an open palm configuration, rather than pointing with an index finger, which is the human method of pointing in the cultures to which Bow was exposed.

People	KNOW LIFT MASSAGE OPEN PLAY POINT PRETEND PUSH READ RELAX ROLL SCRATCH SEE SHARE SHOW SWING THROW TICKLE WANT WANTS WIGGLE WRESTLE WRITE Toys ALBUM BALL BEAR BIN BLANKET BLOCK BOOK BOX CRAYON DINO- SAUR DRUM DRUMS GORILLA HARMON- ICA HAT JUG KAZOO LID MAGA- ZINE	MASK MUSIC NEW TOY OLD TOY OTHER TOY PANTS PAPER PENCIL ROPE SHEET SHIRT SHOE SOCK STRING TOY TOY BOX TOY CAR WAGON XYLO- PHONE Body Parts ARM BACK BOTTOM CHIN EARS EYES FACE FACES FEET FINGER FOOT HAND HEAD LEG LEGS LIPS MOUTH NOSE SHOUL- DER TOES TONGUE TOOTH TUMMY	Foods	APPLE APPLES BANANA BANANAS BREAD CAKE CARROTS CEREAL CHEESE CHERRIES CHICKEN COOKIES FISH FOOD GRAPES GREEN APPLE JUICE MCDON- ALD MEAL MEAT MILK PEACH PEAS POTATOES PURPLE GRAPES RAISINS RED APPLE RICE STUFFING SWEET POTATO WATER YOGURT Colors BLACK BLUE GREEN NOT BLUE NOT RED ORANGE PURPLE	RED YELLOW Potty DON'T NEED TO PEE POOP POTTY Places BIG POTTY BOW'S POTTY COM- PUTER ROOM DOOR KITCHEN LIVING ROOM PHILLIP'S ROOM PLAY ROOM TUNNEL WINDOW Misc. AND ANIMALS ARE BAD BED BIRTHDAY CAT DON'T DOWN ENOUGH FAST FRUS- TRATED FUNNY GENTLE GET U GOOD JOB HAPPY	HARD HI HOW MANY IN IS LATER MAD MEAN MINE NAUGHTY NEVER NICE NO NOT NUMBERS OFF OKAY ON OR OUT PLEASE READY SHAPES SLOW SMELLY SOME- THING ELSE START STOP THE COLOR IS TIRED TV UP WHAT COLOR? WHEELS WHERE WHO WHY WORDS YES YOURS
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Figure 3. Bow's English vocabulary of 238 words arranged by semantic category.

2. **Assisted Finger (AF)** – Bow pointed with his index finger, like the humans around him, but he had to help the index finger by supporting it with his other hand. (Pointing with the index finger is an unnatural gesture for a chimpanzee. Bow couldn't do it with one hand.)
3. **Researcher's Hand (RH)** – Bow took the researcher's hand and used it as a pointing device. Bow's hand was the moving force behind the gesture, and the researcher's hand was like an inanimate object that Bow was manipulating.
4. **Prompted (PR)** – In a prompted point, the researcher took Bow's hand and made it point. In a prompted point, Bow is not the real speaker. The researcher is suggesting a lexigram to Bow.

The best evidence for Bow's autonomous language use would have been either an OHP or an AF. However, as the experiment progressed, Bow showed a marked preference for RH. We will explain why in the following sections.

3. THE ROLE OF FLOORTIME. Children who are developmentally delayed, whether diagnosed with classical autism, Asperger's syndrome, hyperlexia, PDD-NOS, or some other autistic spectrum disorder, have been found to make remarkable progress when their caretakers engage with them according to the specifications of the floortime model of play therapy. (Greenspan & Wieder 2006.) The two major goals of floortime are to follow the child's interest and to bring the child into a shared world. By engaging in play on the child's level of development, caretakers encourage and facilitate communication in context that is directed to the child's areas of interest. The emphasis is not on any particular formal linguistic skill, so much as on the child's ability to engage with others. Caretakers encourage the child to open and close as many circles of communication as possible, to engage in turn taking in communication, whether verbal or non-verbal, in order to elaborate upon the child's expressed desires and preferences.

Bow was given a modified form of floortime for two years, from age three to age five, before he began to make his linguistic breakthroughs in the summer of 2007. The lack of progress during the first two years of floortime was due primarily to a mismatch between the researchers and Bow in terms of their relative metabolic speeds and the ability to process information at a standard rate. Bow was not autistic and had normal social impulses, but the rate of communication used by the researchers was not well matched to Bow's natural tempo.

Chimpanzees operate at a higher speed than humans. They respond more quickly to physical stimuli, social events, and even linguistic input. When Bow responded to our questions, we often didn't see the answer because he moved so fast. It was not until we watched the video footage of our exchanges several times, over and over again, utterance by utterance, gesture by gesture, that we began to pick up on the fact that Bow had indeed used lexigrams to communicate with us spontaneously.

It has been theorized that chimpanzees either lack a theory of mind, or alternatively, have a less developed theory of mind than humans. (Povinelli 2004). The presence or absence of a theory of mind is not an all or nothing proposition. Humans are not born with

a theory of mind. They develop their knowledge about the states of mind of others slowly, over time. Even in the case of normal adults, it is arguable that many continue to develop their theory of mind over a lifetime of interacting with others. More mature adults tend to understand more subtle issues of state of mind than less mature adults.

In any communicative encounter, one can take a normative view, suggesting that the better theory of mind is that which would give a correct understanding of the majority of interlocutors. Alternatively, one might take a transactional view, rating as the better theory of mind that which explains the behavior of one's current interlocutor, no matter how atypical his or her state of mind might be. The importance of this distinction is often lost in human to human communication. When an autistic child fails to understand an interlocutor's point of view, often it is assumed that this is because the child does not realize that the other party has a mind. The possibility that the child assumes the other party has a mind *just like his own* is often discounted.

When we began floortime with Bow, both Bow and the researchers had an essentially normative view of each other's states of mind. The norms of each party were largely based on introspection. Bow assumed we knew what he had said, when he answered our questions at a rate of speed which would have been sufficiently slow for him to understand the utterance. The researchers, on the other hand, assumed that Bow's lexigram pointing would proceed at a rate of speed that we could follow. Each side ignored the point of view of the other.

This communicative impasse was resolved by Bow when he chose to use our hands as pointing devices in order to gain our joint attention.

It turned out that in our case, floortime helped us, not because it allowed us to view things from Bow's perspective, but rather because, little by little, in the course of play, Bow learned what he had to do in order to reach us. It may be that many children who are considered to be behind in their development are facing similar problems of learning how to interact with adults who are much slower than they are.

4. JOINT ATTENTION. In the following transcriptions of video clips³, we will see how Bow attempted to communicate using an OHP, but was not observed until he resorted to RH:

- (1) 07021603-3 Feb. 16, 2007
Bow (RH): CHASE
Aya: Who? MOMMY BOW PHILLIP CARRIE (shrugging) Who?
Bow (simultaneously): (OHP) MOMMY (Aya doesn't see.)
Carrie: He just kind of hit "MOMMY" with the back of his hand.
Bow (PR): MOMMY CHASE BOW

In Clip No. 07021603-3, Bow and Aya Katz were on one side of a glass partition, while Carrie Stengel and Phillip Jones were on the other side. There were four lexigrams for names

³ Thanks are due to Danay Downing, Mary Dunham, Phillip Jones, Eden Michaelov and Carrie Stengel for their work with Bow, and the camera work, editing and transcriptions upon which this section is based.

posted on the glass: MOMMY (referring to Aya), BOW, CARRIE, and PHILLIP. There were three lexigrams for actions on the glass: CHASE, BLOW and KISS. Bow could ask for each of the participants to perform the transitive action on each of the other participants. If the two selected participants were on the same side of the glass, the action was performed with actual touching. If the two participants selected were on different sides of the glass, the action was performed through the glass, in a ritualistic fashion, without real touching.⁴

Bow used the researcher's hand to select the lexigram CHASE. Aya asked him orally "Who" and then pointed at each of the possible answers, then repeated "Who", shrugging. While Aya was engaged in naming the possible participants for the CHASE action, and before she had shrugged, Bow selected MOMMY. However, Aya was so busy talking and pointing, that she did not see him do this. By the time it was pointed out to her that Bow had made his selection, Bow was not willing to say anything more, and Aya prompted him to say MOMMY CHASE BOW, before she began chasing him around the room to his great delight.

In order to sustain a conversation, interlocutors must be open to unexpected communication from the other party. Part of the reason that Bow's progress under floortime was stalled was that we were unable to respond in real time to Bow's unexpected comments. An example of this, where Bow's OHPs were completely missed and ignored is set forth below:

- (2) 07030908-1 March 9, 2007
- Carrie:** Okay, all right, ready to play the new toy game? All right, let's play, let's play. Okay, Bow, you have to watch. You have to watch where I put it, okay?
- Carrie:** Okay, you watch where I put it.
(Carrie holds the green bowl and the blue toy up for Bow to see. Then she hides the blue toy beneath the green bowl. Bow makes raspberry sounds.)
- Bow (OHP):** TOY BLUE (Carrie doesn't notice.) BLUE TOY. (Carrie still doesn't notice.)
- Carrie:** Okay, okay, Phillip, Bow's ready to tell you. He saw where it went.
- Phillip:** (approaching the glass): Where is it?
- Carrie:** Hey, Bow, can you tell Phillip where it is so that you guys can play with it? Can you tell him? He doesn't know.
(Bow runs off to the far corner of the room and stays there for a while.)
- Phillip:** Bow, come here. Bow, come help me.
- Carrie:** Can you help him?
- Phillip:** Bow, help me.
- Carrie:** Come help Phillip find the toy.
(Bow approaches the glass, then walks away.)

⁴ The glass partition was where the words were posted. Words had to be posted on the other side of the glass from Bow in order to conserve resources, otherwise he would destroy them. Only one person went in with Bow each time, while the rest participated on the other side of the glass to avoid power struggles.

- (2) **Carrie:** Aw, you guys aren't going to get to play with it then.
Phillip: Bow, where is it? Do you know?
Carrie: You know where it is. Don't you want to play with it? Do you want to play with the new toy?
Phillip: (Reaching out with his arm and offering Bow his hand) Help me. (Bow comes back and takes Phillip's hand.)
Carrie: Show him where it is.
Bow (RH): GREEN
Phillip: Green.
Carrie: Yay! It was under the green one, wasn't it? Okay, you guys can play with it now.

In Clip No. 07030908-1, Bow and Phillip Jones were on one side of the glass, while Carrie Stengel was on the other. As part of a game that targeted issues of theory of mind, Phillip was to close his eyes, while Carrie hid a toy under one of three colored bowls: green, blue and yellow. The object of the game was for Bow to tell Phillip under which bowl the toy was hidden. If Phillip guessed correctly, then Bow would get to play with the hidden toy. However, while Carrie was busy hiding the toy, Bow pointed at the lexigram TOY followed by the lexigram BLUE. When Carrie ignored this, Bow pointed again to the lexigram BLUE, followed by the lexigram TOY. Carrie again did not see. By the time Carrie was ready to pay attention to what Bow had to say, Bow did not want to say anything anymore. Eventually, after much cajoling, Bow took Phillip's hand and used it to point at the lexigram GREEN, to identify under which bowl the toy was hidden.

Carrie Stengel reported that after she watched the video footage in Clip No. 07030908-1 for the first time, she did not yet see that Bow had said "BLUE TOY." Even when she began to cut the unedited footage into small clips, she still did not see what Bow had said. It was not until after she began to transcribe the dialogue, slowing the footage down and observing each segment of the exchange separately, one utterance at a time, that she noticed that Bow had said "BLUE TOY." By then, it was entirely too late to reply to Bow's spontaneous utterance. Since Bow could not make the researchers pay attention to anything unexpected that he had to say, he was trapped in a game of multiple choice communication. He could answer Carrie's question about where the new toy was hidden, or he could refuse to answer, but he had no ability to change the course of the conversation. Bow must have experienced many such moments of frustration at being ignored during the first two years of play therapy before the problem came to our attention.

The method of transcription changed considerably during the fall of 2006. From September of 2005 to September of 2006, handwritten notes and video clips were two separate methods used to log exchanges with Bow. When video footage was shot, it was never transcribed, since it was believed that a single viewing would suffice to see the contents of a conversation with Bow. On other occasions, no footage was shot, but a volunteer kept handwritten notes of the exchanges. The handwritten notes were later transcribed into dialogue form. As a result, when we had written documentation of conversations, there was no video footage to review. When we had video footage, there was no written transcript.

In the fall of 2006, the method of transcription was overhauled, and now each play therapy session with Bow was cut into small clips of approximately three minutes each, and then each clip was transcribed into dialogue form. The intent was to provide a streamlined method of storing data. The unexpected bonus was that we suddenly began to see things that Bow had said, and we began to realize how much faster he was at using lexigrams than we were.

During the two year period, from 36 months to 60 months of age, Bow had many opportunities to answer questions and make requests, but he was seldom observed to use more than one lexigram at a time. His progress was characterized by rapid sprints forward with the arrival of each new volunteer, followed by periods when he refused to deploy his lexigrams except with his adoptive mother during mealtime. Even then, with the passage of time, he increasingly preferred to use RH over OHP.

In time it became clear that using RH was the only method Bow could devise to ensure the joint attention of his interlocutor. While this state of events was unfortunate because it created difficulties for third party onlookers to observe that Bow was indeed speaking for himself, it did allow Bow to move forward, and it paved the way for the breakthroughs to come.

5. BOW'S LINGUISTIC BREAKTHROUGHS EARLY IN THE SUMMER OF 2007. In July of 2007, Bow began to make progress in employing his lexigrams to talk about topics of interest to him, rather than necessarily answering the questions posed to him by others. His use of RH ensured that researchers attended to his unexpected comments.

(3) 07070201-1 July 2, 2007

Aya asks and points: Okay. Which bowl, the YELLOW, the GREEN or the BLUE, should I turn over? Which toy do you want — the one under the YELLOW, GREEN or BLUE bowl?

Danay: Which toy do you want?

Bow (RH): SHOE

Aya: Well, I don't know where the shoe is. Is there a shoe?

Danay: Oh, he's untied my shoe.

Aya: I guess Bow wants to play with Danay's shoe.

In Clip No. 07070201-1 Bow selected his own topic. Bow has always been fascinated by shoes, and while he does not like wearing them, they rank high in his list of favorite play-things. When researchers tried to entice him with a different toy, playing the colored bowl game, he preferred to untie the shoelace of his current playmate, Danay Downing, while pointing at the lexigram SHOE. While this was only a one word utterance, it represented a leap in Bow's communicative range. He chose the topic, and he was talking about his own focus of interest. This is the beginning of the spontaneous use of language in context.

(4) 07070504-4 July 5, 2007

Aya: ? מה אתה רוצה עכשו 'What do you want now?'

? אתה רוצה משהו אחר 'You want anything else?'

Bow, RH: לאכול 'TO EAT'.

- (4) **Aya:** ? לאכול מה 'To eat what?'
Bow, RH: אדום 'RED'
Aya: ? אתה רוצה אדום 'You want red?'
 ? איזה דבר אדום אתה רוצה 'What red thing do you want?'
 ? כן או לא 'Do you want an apple? Yes or no?'
Bow, RH: לא 'NO.'
Aya, while pointing: ? אתה רוצה... מה עוד יש לנו אדום 'You want... what else do we have red?'
 ? אתה רוצה ענבים אדומים ? כן או לא 'Do you want red grapes? Yes or no?'
Bow, RH: לא 'NO.'
Bow, RH: משהו אחר 'SOMETHING ELSE.'
Aya: משהו אחר אדום 'Something else red.'
Aya gets the watermelon and asks: ? כן או לא 'Is this what you want? Yes or no?'
Bow, RH: כן 'YES.'
Aya: זה אדום. זה אבטיח. 'This is red. This is a watermelon.'

In the July of 2007 Bow found creative ways of using his limited store of lexigrams to talk about whatever subject matter presented itself. In the past, Bow had used the lexigram SOMETHING ELSE to ask for anything he did not have a word for. Now he was using the color of foods for which he had no lexigram to identify which food he wanted. In the course of the discussion in Clip No. 07070504-4 Bow closed 5 circles of communication in helping to select what he wanted. Here are the circles numbered

1. Q:What do you want? A :To eat.
2. Q : To eat what? A :Red.
3. Q : An apple? A : No.
4. Q : Grapes? A : No. Something else.
5. Q : Is this what you want? A :Yes.

While the researcher in this clip was leading the conversation by following up every answer with a question, Bow was making linguistic choices at every turn to help zero in on what he wanted.

In time, Bow began to use the color of a food in order to identify even foods that he did not wish to eat. He began to call the cereal that he saw his mother and sister eat at breakfast BROWN, using the Hebrew lexigram for that color. He did this even if he did not wish to eat cereal. Sometimes he would merely comment on the cereal-eating event and then refuse to eat the cereal when it was offered.

What happened next, as it appears in Clip No. 07071701-1 was that Bow used the lexigram BROWN, in English, to comment on an event he had not personally witnessed.

- (5) 07071701-1 July 17, 2007
 Eden enters and locks door.

- (5) **Eden:** Hi, Bow. (He turns to her.) What? What's up?
Bow (RH): BROWN.
Eden: Brown? What?
Bow (RH): MOUTH.
Eden: Mouth? *This* is your mouth. This *is* your mouth.
 (Bow smells Eden's mouth.)
Eden: Are you telling me I just ate cereal? I just ate cereal. I know you call cereal brown sometimes. Is that what I ate? Is that what Eden ate?

Bow had referred to cereal as "brown." In those other instances, he was either requesting cereal for himself or commenting on the fact that others were currently eating cereal. Here, he used the lexigram BROWN to comment on what someone had eaten outside his presence. He could smell cereal on Eden Michaelov's breath. He chose to communicate this to Eden. It is even possible that he inferred from this that Eden had eaten cereal, although we cannot be sure of the inference.

6. CONCLUSION. The events narrated in this paper marked only the beginning of a series of breakthroughs that Bow underwent in the summer of 2007. The remaining breakthroughs, which occurred at the end of July and in the month of August, are outside the scope of the presentation on which this article is based, as they occurred after the LACUS conference at Eastern Kentucky University. They will be documented in future publications.

For the time being, it is sufficient to note that by resolving the problem of joint attention, Bow was able, in July of 2007, to initiate spontaneous comments on a topic of his own choice and to express his own preferences by closing as many as five circles of communication. He was also able to comment on the sensory evidence of past events that occurred outside his presence. While Bow's utterances still tended to be composed of single words, the conversations he engaged in were coherent and involved coordinated turn-taking.

In this paper we have seen how the problem of synchronizing the relatively slow processing rates of humans with the relatively fast rate of chimpanzees was resolved by Bow through the use of RH as a prop to gain the joint attention of his interlocutors. When two parties are communicating at a mismatched speed, it seems inevitable that the faster party will have to slow down, as it is unlikely that the slower party can significantly alter the optimal speed of processing that is dictated by anatomy and metabolism. In human-chimp communication, the slower party is the human.

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PRESCRIPTIVISM AND NATIVE-SPEAKER GRAMMATICALITY JUDGMENTS

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THIS PAPER'S THESIS IS THAT, given limitations of time, manpower and financing, linguists should not have to apologize for devising practical, at times even ad hoc, techniques for initial verification of grammaticality judgments. Going back to at least the sixties, we find a voluminous literature on the multi-faceted nature of such judgments and the resulting irrelevant factors which prevent linguists from establishing a direct link between competence and native speaker intuitions.¹

Both linguists and psycholinguists have obsessed over the elusive goal of rigorous links between theory, data, and methodology. In the first section of this paper, I will summarize the problems inherent in determining the relationship between native speaker intuition and rules and point out the limits of a purely experimental solution to such problems via an examination of a psycholinguistic experiment on bilingualism. In the second section, I consider the issue of using language experts as guides to analysis. The third section considers native speaker reliability at the stage of initial inquiry, the major challenge being the prescriptive bias of informants, at least in my own situation as a non-native speaker investigator of French. Citing frequency differences between prescriptive and non-prescriptive phenomena, I will first present evidence that school-grammar issues account for a small minority of what is to be studied. I then propose a technique for minimizing bias from informants when the phenomenon under study is subject to prescriptive assumptions. I conclude with a brief discussion on corpora as an alternative to elicitation of judgments.

1. NATIVE SPEAKER INTUITION AND COMPETENCE. Our discipline stands apart from traditional domains of language study in its treating native-speaker intuition as a path to the underlying linguistic system. Such intuitions, available in the form of grammaticality judgments, are notoriously subjective, unreliable and misleading, at least in their raw state.²

¹ For example: Bialystok 1979, Birdsong 1989, Bolinger 1968, Carden 1976, Carroll, Bever & Pollock 1981, Coleman 1965, Cowart 1994, Davy & Quirk 1969, Duffley 2002, Ellis 1991, Gerken & Bever 1986, Gombert 1992, Greenbaum 1976, Hill 1961, Levelt, Sinclair & Jarvella 1978, Maclay & Sleator 1960, Marks 1967, Masny & d'Anglejan 1985, McCawley 1982, Mohan 1977, Nagata 1992, Schütze 1996, Shanon 1973, Sorace 2003, Spencer 1973, Suzuki & Itagaki 2007, Valian 1982, and Vetter, Volovecky & Howell 1979.

² While grammaticality judgments have for some time been closely associated with generative theory, they are by no means restricted to that approach. Well before transformational grammar arose, linguists doing field work with informants routinely solicited the latter's judgments about whether structure X was possible in the language being studied. Today, functionalist approaches

Thus, the model for eliciting or inferring grammaticality judgments has come from the social sciences, where well-honed, rigorous experimental design and analytic techniques are supposed to ensure consistency of results. This consistency is to be both internal (i.e., the results of an experiment should not contradict each other) and external (the findings should be confirmed, or at least not refuted, by both further experiments and casual observation).

Birdsong 1989 and Schütze 1996 give a rich overview of the obstacles to such consistency. Problems include:

1. Variability among informants, especially differences in metalinguistic awareness, which depends on, *inter alia*, language expertise, degree of literacy, and individual abilities to focus on form.
2. Comparative reliability of elicitation techniques, e.g., interviews vs. questionnaires and having subjects produce data vs. having them evaluate data.
3. Sufficiency of numbers for credible inferences, i.e., how extensive should both the subject pool and test data be?
4. The level of detail of the instructions given to subjects: Birdsong reports that one subject classified a string as a non-sentence because it was a question.
5. Subjects' awareness of what is being tested: most practitioners are opposed to making them aware, but others contend that subjects might then judge the data with irrelevant criteria.

Clearly, then, reliable experimentation is still a work in progress. The consensus is that a rigorous experimental methodology remains a worthwhile goal, but it is not a cure-all. Labov (1975:103–13) argued for a blend of introspection, observation, and experiment that would all contribute to the discovery of the underlying system. He proposed four rules-of-thumb which would preserve the empirical foundation of linguistics:

1. **The Consensus Principle:** in the absence of evidence to the contrary, we may assume that any native speaker's judgment captures the intuition of all other native speakers.
2. **The Experimenter Principle:** if there disagreement about an introspective judgment, the judgment of those familiar with the theoretical issue is to be ignored.
3. **The Clear Case Principle:** to win out, a judgment must be confirmed by "at least one consistent pattern in the speech community" (103). This pertains especially to dialect differences: a judgment supposedly limited to a dialect must be shown to be a clear case in that dialect.
4. **The Principle of Validity:** for the purpose of valid description, a linguist will prefer a particular use of language over an introspective judgment when the use is more consistent. Labov claims this is a necessary requirement because introspection is a

such as Goldberg 2006 still utilize the asterisk as an indication of non-controversial unacceptability, without reference to any empirical source such as a corpus.

notoriously unreliable method, for example in phonetics where natives have failed to label as different narrow phonetic distinctions which they consistently make.

Note that even for an empiricist like Labov, the default remains native speaker intuition as a means for determining competence. He made these suggestions over 30 years ago, but they have yet to gain anything resembling general acceptance. Linguists' attitudes range from dismissal of intuition-related problems (e.g., Newmeyer 1983) to attempts at eliminating extraneous variables via wholesale adoption of social science experimental design techniques (e.g., Chaudron 1983). Although experimentation has become more widespread in our discipline, linguistics is still far from resembling psychology and sociology in its methodology. There are reasons for this, and I shall demonstrate some of them with a look at a psycholinguistics paper on bilingualism, in particular the problems surrounding the concept of 'non-word'.

1.1. THE LIMITS OF METHODOLOGICAL RIGOUR. Sebastián-Gallés, Echeverría, and Bosch (2005) look at the effects of simultaneous vs. early sequential bilingualism, the latter meaning that learning the second language was not started until around age four. The method consisted of a discrimination test for the two mid-front vowels, in phonological contrast in Catalan but not in Spanish. When presented with a Catalan form containing /e/ or /ɛ/, subjects had to indicate whether it had the correct mid-front vowel; if it did not, they were to label it a 'non-word'. Participants were university students from Barcelona with virtually native ability in both Spanish and Catalan. The experimental design had all the methodological rigour and meticulous planning one would expect from psycholinguists.

For correctly distinguishing the two mid-front vowels in Catalan, the ranking was:

1. Catalan-dominant sequential bilinguals
2. Simultaneous bilinguals with a Catalan-speaking mother
3. Simultaneous bilinguals with a Spanish-speaking mother
4. Spanish-dominant sequential bilinguals

The degree of mastery of the e/ɛ Catalan contrast correlates, first, with the time of first exposure to Catalan (the earlier the better) and, secondly, input from Spanish (the later the better). In other words, optimum mastery of the e/ɛ contrast requires keeping the child in a purely Catalan environment, avoiding Spanish until the end of early childhood. In spite of the study's rigour, several questions come to the fore:

1. What is the functional load of the e/ɛ contrast in Catalan? The authors provide but one minimal pair. They claim that a low score for the e/ɛ contrast will have later consequences, but give no specifics.
2. What of the sociolinguistic issues underlying diglossia in Barcelona? Spanish and Catalan have long coexisted and competed there. Since Franco's death in 1976 and the granting of regional autonomy to Catalonia, Catalan has become the obligatory medium of instruction in schools and universities. On the other hand, massive

immigration from impoverished areas of Spain has meant that the Catalan elite has for decades felt linguistically besieged and most in the academic establishment would agree with postponing exposure to Spanish, a position reinforced by the results of this experiment.

3. Would parallel morpho-syntactic mistakes also be observable with the subjects? If the distinction is limited to phonological contrasts with low functional load, this is not a very striking difference in competence.
4. Would focusing on a Spanish contrast non-existent in Catalan give reversed ranking? If not, i.e., if there were an asymmetry in the acquisition of the two languages, would it be due to differences in sociolinguistic status?
5. Does hearing a word with the wrong mid-vowel justify giving it non-word status? What really is a non-word? The erroneous forms which Spanish-dominant bilinguals failed to correctly label are analogous to regional pronunciations like southern U.S. [pa:] for 'pie'. They are non-words only in the production sense and only vis-à-vis the competence of a Catalan-dominant bilingual. A native Catalan speaker would likely have no trouble understanding them in context and only a purist would attempt correction. With the high proportion in Barcelona of Spanish-dominant Catalan speakers, the situation recalls European French, where the majority of native speakers have rendered the same e/ɛ contrast a purely phonetic one reflecting complementary distribution, even though this has led to homophony for the first person singular forms of the future and conditional. Spanish-dominant Catalan speakers may be creating their own variety of Catalan, which hardly impinges on their communicative competence in that language. After all, the Spanish-dominant subjects were all university students attending lectures and doing assignments in Catalan. In psycholinguistics, 'non-word' is a well-established concept which has been the basis of innumerable processing experiments. For mainstream linguistics, however, this sense is, to put it mildly, imprecise, and at times may reflect an underlying prescriptivism.³

2. INTUITION AND LANGUAGE EXPERTISE. According to Birdsong (1989) and Schütze (1996), the linguist should avoid taking as authoritative not only his/her own intuition but

³ I bring up these questions not to disparage the paper, which fulfills its authors' objective in showing that competence in one specific area of phonological discrimination depends on the amount of relative exposure (i.e., the subjects in the top group had the longest, most intense exposure to Catalan and the least exposure to Spanish), even where the exposure differences are minor compared to late bilinguals. The questions which the study leaves unanswered suggest, however, that a rigorous experiment focusing on a single variation in one linguistic component cannot give a full picture of the interaction between two languages acquired in childhood. If that single variation were shown to underlie any dysfunction in communicative ability, then the experiment would indeed gain significance as more than just a validation of exposure as a factor in bilingualism. There is no evidence, however, that the purportedly disadvantaged groups whose exposure to Catalan was not immediate and via a Catalan-speaking mother have grown up with any functional bilingual deficit.

also the judgments of other language specialists like authors, teachers, or translators. In this section, I would like to argue that such specialists at times provide insights which can form the basis of explanation and their comments are often more helpful than carefully elicited judgments from naïve speakers. Moreover, in other cases, non-specialists may offer valuable metalinguistic comments.

Let us first take up the case of positive *anymore*, meaning ‘nowadays’, Labov 1975:106–8 refers to elicited judgments from naïve Philadelphia speakers about whether they used *anymore* in contexts without negative polarity, e.g., *John is smoking a lot anymore*. Twenty percent of subjects denied ever using it and expressed bewilderment about its meaning, yet student interviewers later overheard them using it with precisely the indicated sense. Labov concludes that the language expert, in this case the linguist, in some instances knows more about these people’s intuition than they themselves do, if by intuition is meant the speaker’s knowledge underlying both production and comprehension.

An example showing the opposite comes from WordReference Forums, a discussion site for major European languages. The majority of the postings reflect the linguistic insecurity of naïve speakers, both native and non-native, on issues like spelling and what authorities have to say about lexical and grammatical variation. As an informal experiment, I posted a question about indicative vs. subjunctive selection with the French verb *penser* ‘to think’ (<http://forum.wordreference.com/showthread.php?t=170997>, accessed 2006). Most of the 19 replies repeated the official school teaching that subjunctive is required in interrogative or negative contexts, but there were two which referred to the speaker’s viewpoint, i.e., if speakers assume the subordinate verb likely represents a fact, they will use the indicative; if they have their doubts about the subordinate clause’s truth, the subjunctive will arise. Normative treatments ignore this latter factor, but my observations as a non-native Francophone suggest that speaker’s viewpoint explains much written and spoken usage which is at variance with the prescriptive accounts. There was nothing in those two replies to suggest that the respondents were linguists (in fact a perusal of several posts gave no evidence of linguists’ contributions). They may have been teachers, but my hunch is that they were simply amateurs with curiosity about and sensitivity to language matters. Their replies suggest that among non-linguists there are a handful of native-speakers that can be of help to the investigator. This of course is not news to linguists doing fieldwork who have been lucky enough to land good informants.

A third example shows that non-linguist language teachers, even those with a traditional prescriptive background, can be useful informants. In Kliffer 2004, which examines the presence vs. absence of the definite article in noun complements headed by the French preposition *de*, I submitted contextualized tokens of the expressions *soif de pouvoir* and *soif du pouvoir*, both translatable as ‘thirst for power’. The aim was to see to what degree my nine native-speaker colleague-informants concurred with the choice of *de* or *du* in each of 20 examples found through Google. My colleagues showed perfect or nearly-perfect consensus on only 10 examples, suggesting the presence of extra-grammatical factors such as insufficient contextualization or different points of view for different informants. Without going into the details here, suffice it to say that it was the comment of one language preceptor, with no linguistics training, that brought out a key semantic distinction. She

remarked that in several cases the context did not suffice to clarify if it was a question of “political power, as in the case of a head of state” (*soif du pouvoir*) or “any form of power in any domain” (*soif de pouvoir*). As support for this hypothesis, I noticed that when the thirst for power was that of an authority figure (e.g., *Simon de Montfort devient le grand chef de la croisade, il en fait une affaire personnelle, bien plus dans la soif du pouvoir que par conviction philosophique ou religieuse* ‘Simon de Montfort becomes the head of the Crusade, which he makes into a personal affair much more in his thirst for power than out of any philosophical or religious conviction’), both the original data and nearly all informants preferred the porte-manteau *du*, which includes the article. Of course, careful study of the corpus without native speaker intervention might well have brought out this contrast, but this informant’s comment certainly steered the investigation in the right direction. If her remark had been unfounded, a perusal of the data would have undoubtedly led to its rejection. The point is that when a phenomenon is not the object of normative bias, even native speakers imbued with prescriptive attitudes may prove to be reliable informants.

3. MINIMIZING PRESCRIPTIVE BIAS. In the elicitation of grammaticality judgments, our main challenge is to minimize the likelihood of prescriptive bias, an obvious source of ‘noise’. Two ways of countering such bias suggest themselves. First, the linguist could verify that the phenomenon under study is not subject to prescriptive rules which would result in a disconnect between actual usage and metalinguistic judgments. Secondly, the pre-analysis could anticipate the effects of such potential bias, so as to view only a subset of possible responses as helpful.

3.1. AVOIDANCE OF PRESCRIPTIVELY-LOADED PHENOMENA. Linguist native- and near native-speakers of a language are generally aware of which areas of phonology, morphology-syntax, and the lexicon are saddled with prescriptive attitudes. These domains may carry sociolinguistic markers indicative of speakers’ socio-economic or regional background, or they may reflect remnants of school-grammar, where there is a disconnect between everyday usage and what is drilled in the classroom. Every beginning linguistics student is exposed to some of these phenomena, in order to drive home the difference between descriptive and prescriptive approaches to language study. By the time even purely theoretical linguists are publishing, they usually know from professional experience which phenomena of their native language are likely to give rise to prescriptively biased judgments or behaviour from informants.

My point here is straightforward: first, linguists can exploit their prior knowledge of whether or not a phenomenon brings with it prescriptive attitudes and plan less direct ways of investigating its actual usage. Secondly, the number of prescriptively-biased phenomena is proportionately small. For instance, spoken French has 14 tense/mood forms. Let us conservatively assign to each one an average of 4 functions, for a total of 56 functions. Of these, I can detect only nine which display non-convergence between everyday usage and school grammar. (For details, see Appendix 1.) Moreover, if we look at the veritable explosion of work on syntactic phenomena over the last 50 years, the vast majority of points studied have been devoid of prescriptive baggage; most of them since the 70s have involved

subtleties well beyond the consciousness of naïve speakers. According to Labov, “The great majority of linguistic rules that we investigate are not socially marked” (1975:105).

3.2. HOW TO ACCESS INTUITIONS WHEN THE OBJECT OF STUDY IS PRESCRIPTIVELY TAINTED. The second method is to finesse prescriptive bias.⁴ To illustrate, we will look at French past participle agreement (henceforth PPA), arguably the most blatant instance of a chasm between everyday usage and school grammar. Obenauer (1993) claims that there is a version of PPA which reflects implicitly acquired, procedural knowledge (i.e., native speakers have intuitions about it which are as genuine as any other rule acquired without formal instruction). Specifically, he claims that agreement is impossible if the preceding direct object is [-specific], i.e., corresponds to a referent already evoked in the context, e.g., *Combien d’autos ont produit(*es) les Suédois en 2005?* ‘How many cars did the Swedes produce in 2005?’ Agreement is optional when the preceding DO is [+ specific], e.g., *Quelle participante n’astu pas compris(e)?* ‘Which (female) participant did you not understand?’

Let’s look at the four logical possibilities that could arise when we test this hypothesis on language experts, i.e., people who competently handle traditional PPA when writing or monitoring their own speech, such as teachers, journalists, authors, and public speakers.

1. The informant has the PP agree and this conforms to PPA: here there is no unequivocal evidence that the rule has become part of procedural knowledge, i.e., the response could be due to conscious application of PPA.
2. PP agrees and this violates PPA: this could reflect an proceduralized sub-rule, but for the data in question, Obenauer’s hypothesis rules out this possibility because only preceding DOs are at issue and PPA always mandates agreement for them.
3. PP doesn’t agree and this conforms to PPA. This is the same as case 1, i.e., it could be due to school learning.
4. PP doesn’t agree, in violation of PPA. This could be due simply to non-applicability of PPA, the empirical norm in spoken French *or* to a proceduralized sub-rule application of Obenauer’s [\pm specific] distinction. With language experts, this would be very significant because, even though they are keenly aware of PPA, they reject it here.

In other words, we could rule out prescriptive bias in Case 4 (PP doesn’t agree; PPA violated). Such a state of affairs is the only one where we could be dealing with “pure” native speaker intuition, unaffected by the prescriptive PPA. My francophone colleague-informants indeed found that agreement sounded unnatural with [-specific] objects where PPA would require it, but only in quantification contexts, i.e., with *combien* ‘how much/many’. Obenauer’s data for [-specific] objects without PP agreement is limited to just such sentences with the quantifier *combien*, e.g., *Combien d’essence as-tu mis (*mise)?* ‘How much gasoline did you put in?’⁵

⁴ This section is reproduced in part from Kliffer 2007.

⁵ Possibly, subjects took as the object *combien*, which is indeterminate for number and gender, hence the PP unmarked for agreement. Note, however, that agreement with the at times implicit

With other, non-quantified indefinite objects, e.g., *Montre-moi des pièces que tu as écrit(es)*. 'Show me plays you've written', agreement may or may not occur in both oral French and in Google texts, so [\pm specific] is likely too general a feature to explain this internalized constraint on PPA. The point is that the restriction of non-agreement to quantification would likely have gone undetected were it not for this method of "working around" expert native speakers' prescriptive biases. We need to stipulate 'expert' here because non-expert NSs are always uncertain of PPA and show great linguistic insecurity,⁶ so their judgments about Case 4 would have been far less reliable.

4. CONCLUSION. I hope to have shown how an investigator can work around prescriptive bias and that the more subtle the phenomenon under study, the more helpful an expert's intuition. Even with straightforward acceptability issues like those surrounding positive *any*more, we have seen that naïve NSs are not always the most reliable subjects. Since the 1960s, virtually every kind of NS intuition has been considered defective in some respect, yet replacing these judgments with rigorous experimentation alone provides no guarantee of insight.

A related question is whether judgments should give way to corpora, which are so much more numerous and accessible nowadays. Corpora have an obvious empirical advantage: the presence and frequency of structure X in a context-rich corpus may certainly confirm that X is part of competence, such that prescriptive biases and vagaries of metalinguistic awareness become non-issues. However, since corpora are by nature fixed, the analyst may face lingering questions unaddressed in even extensively marked-up data. These are questions that an informant might well be able to answer on the spot; an obvious example would be pragmatic factors such as a discourse participant's attitude not signalled by any specific expression, or the importance of the surrounding context for the correct morpho-syntactic and/or semantic characterization of X. Indeed, concordances may be up to the task of resolving the latter issue, but, as we saw with the *soif de/du pouvoir* instance, the subtle, non-binary nature of a distinction may escape detection with a purely corpus-based approach. Corpora are undeniably useful, but decades of critiquing the native-speaker grammaticality judgment have yet to bring about the latter's demise. Despite the possibility of prescriptive 'contamination', such judgments have proved to be a useful tool, provided the linguist subjects them to the appropriate empirical methods of verification.

N quantified by *combien* is still possible, e.g., *Combien sont grises?* 'How many (e.g., *voitures* (f.) 'cars') are gray?' Also, the PPA still requires agreement with the complement of *combien*.

⁶ This insecurity is acknowledged by virtually every French native speaker and is evidenced via a Google search for *a fallus* 'was necessary'. This string contains an agreement which is erroneous in any context because of the verb's impersonal status, but nevertheless produced nearly 1300 hits. A check of the first three pages revealed that only two hits contained unrelated, homonymous forms of *fallus*.

APPENDIX 1

Spoken French has 14 tense/mood forms:

- Indicative:
 - Present
 - Compound past
 - Imperfect
 - Pluperfect
 - Passé surcomposé (double-compound past)
 - Future
 - Periphrastic 'aller' future
 - Future perfect
 - Conditional
 - Conditional perfect
- Subjunctive:
 - Present
 - Past
- Imperative

I have detected nine divergences between usage and normative rules:

1. *avoir* 'have' replacing *être* 'be' as aux for *tomber* 'fall', *venir* 'come', etc.
2. *aller* 'go' future replacing simple future, even in temporal clauses (*Quand tu vas être...* 'When you are going to be...')
3. conditional perfect replaces pluperfect in *si* clauses (*Si j'aurais su...* 'If I would have known')
4. indicative in place of subjunctive
 - a. after expressions of emotion
 - b. after verbs of belief in the negative or interrogative
 - c. with superlatives
 - d. negative and non-referential heads of relative clauses
 - e. *bien que* 'although' in the past replaces subjunctive with indicative
5. subjunctive instead of indicative following *après que* 'after', *espérer* 'hope', *être probable* 'be likely'...

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FUNERAL ORATIONS, COPIED FOREVER IN A BOOK OR CARVED ON STONE

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OF ALL GREEK SPEECHES, the classic monument is the one pronounced by Pericles at the end of the first year of the Peloponnesian war, as written up by Thucydides. In English, nothing on a par with it was heard until Lincoln's brief Address at Gettysburg. A rare occasion aroused the literary power of a great mind.

Thucydides, more than most authors, has disclosed his motives for recording this one speech. He informs the readers of his history (2.34) that the Athenians had an annual custom, a public funeral for those who had died in war, and that each time a speaker would be chosen to address the grieving multitude. We, as belated readers, may guess that often a phrase or two from the orator would stick in the memory of many Athenians.¹ But something more special than that occurred to the extraordinary man writing a history.

Right after the very opening sentence that gave the writer's name, Thucydides stated and justified his great project—to write up this long, costly war. So in the first book he narrated how it broke out: the local attacks, skirmishes, provocations, diplomatic maneuvers and military preparations. But after war was declared, the first year of fighting could be set forth in a few pages—with no great battle, even when the Boeotians assaulted Plataea and the Athenians reinforced their allies there.

Pericles, however, as a political leader, was inspired to speak idealistically at this annual funeral about democracy in Athens and how it was worth dying for. Thus at least, were his words summarized by Thucydides. It is futile for anyone, many centuries later, to speculate wherein the thinking of one of these men may have been different from the other's.

The brief but poignant aside near the close, addressed to women, has historical import as a revealing anecdote:

ἐἰ δέ με δεῖ καὶ γυναικειᾶς τι ἀρετῆς, ὅσαι νῦν ἐν χηρείᾳ ἔσονται, μνησθῆναι, βπαχεῖαι παραινέσει ἅπαν σημανῶ. τῆς τε γὰρ ὑπαρχούσης φύσεως μὴ χείροσι γενέσθαι ὑμῖν μεγάλη ἡ δόξα καὶ ἥς ἂν ἐπ' ἐλάχιστου ἀρετῆς περίῃ ψόγου ἐν τοῖς ἄρσεσι κλέος ᾖ. (2.45.2)

'If I must mention anything about womanly virtue too, for everyone who will now be in widowhood, I will express it all in brief advice: for you, great is the fame of turning

¹ Aristotle, in his treatise on Rhetoric (3.10, 1411a.2–4), quoted briefly from a speech: 'Pericles said that the young, who were perishing in the war, had vanished from the city as if one were to take the springtime out of the year' (All glosses are my own translation). The speech as given by Thucydides is without any such expression.

out no worse than your inborn nature, and of whichever woman there is the least talk among the males—about her virtue or finding fault with her’.

Both Pericles and Thucydides were Athenian men, speaking or writing to and for the ordinary men in Athens.

They were typical in having personal ties to a few of the opposite sex. Pericles was unusual for what he did on behalf of his beloved Aspasia the Milesian: after his two sons by his lawful Athenian wife died young, the statesman persuaded the people of Athens to make an exception for him and for Aspasia, by recognising as a citizen their son – who was named Pericles like his father.²

About Thucydides, who died while writing up the eighth book of his history, we learn from Ephorus, his successor or continuator, that the great historian in his last years was assisted by his daughter. She listened to him dictating the words when he was no longer physically able to write. Thanks to her, we have the most mature historical account of any oligarchic revolution that has ever taken place. The incomplete eighth book, in depth of understanding, surpasses even what Thucydides had brought to the events of the previous twenty years.³ The young woman (her own name is lost) lived with and doubtless tended her father, but essentially she did not take over the composition from him.⁴

² Aspasia herself, according to Socrates in Plato’s dialogue *Menexenus*, 245, pronounced a funeral oration many years later. The occasion for it, though recent, is not specified; it involved an odd anachronism, since Socrates died in 399 B.C. but the orator refers (245b–e) to the terms of the peace treaty of 387. The time of Aspasia’s own death is not on record; presumably she outlived Pericles, who died in 429. Modern critics guess that Plato intended to show Socrates, in a bit of subtle irony, pretending that Aspasia spoke along the same lines as Pericles; his eulogy, as transmitted by Thucydides and admired by the contemporaries of Plato, was thus deliberately parodied.

See my article (1975), “Diotima’s Visit and Service to Athens,” *Grazer Beiträge* 3:226–30.

³ As Gaetano De Sanctis remarks

La reazione oligarchica del 411 con la sua gravità e imponenza, con gli effetti che ebbe nella vita dell’impero e in quella della città non gli rivelò nulla di nuovo, ma lo indusse a portare per la prima volta su tale ordine di fatti la sua indagine. Così nella storia d’Europa, anzi nella storia umana in generale, la rivoluzione oligarchica del 411 è il primo fatto della vita interna d’uno stato conosciuto, mercé una relazione che ne espone le vicende e ne ricerca le ragioni. (*Enciclopedia italiana* s.v. “Tucidide”; Vol. XXXIV: 463)

⁴ Some ancient scholars, unidentified, thought she had composed the eighth book. But Marcellinus, in a brief biography of Thucydides, refuted that speculation:

Some say the eighth [book of the] history is spurious; for it is not Thucydides’; some say it is his daughter’s, others that it is Xenophon’s. To whom we say that it is clear how it is not the daughter’s; for it was not a thing of womanly nature to imitate such excellence and skill. Besides, if she were so good, she would not have endeavored to hide, nor would she have written only the eighth [book], but she would have left much else behind, demonstrating her own nature. But that [the eighth book] is not Xenophon’s either, its style (*χαρακτήρ*) all but shouts; for much [of the eighth book] is in neither a lean nor a lofty style....

He was in the midst of telling about the journey of the Persian satrap Tissaphernes to the Hellespont. The historian takes him up to this point:

καὶ ἀφικόμενος πρῶτον ἐς Ἐφεσον, θυσίαν ἐποιήσατο τῇ Ἀρτέμιδι. (8.109)
 ‘And arriving first at Ephesus, he made a sacrifice to Artemis’

The author’s daughter added, at most, this little summary of his intention:

ὅταν ὁ μετὰ τοῦτο τὸ θέρος χειμῶν τελευτήσῃ, ἕω καὶ εἰκοστὸν ἔτος πληροῦται. (8.109.2)
 ‘when the winter after this summer ends, the twenty-first year [of the war] is complete’

Egypt was the nation that led the human race in caring for the dead—as well as healing the ailments of the living. Herodotus, no merchant but the ideal traveler, did justice to the wonders that he saw and that his guides explained to him; in order to share all this with miscellaneous readers, he developed a new, simple style, prose free from meter. He described the Pyramids and told how each king had a huge tomb built for him.

In most countries, little that happens to anyone holds the attention of his neighbors. But when he dies, those who love him must take time out and think. They need someone to say what, if anything, he was or did out of the ordinary. The remembered dead are our models, from whom we learned right and wrong. As soon as men knew how to write, they would inscribe on the gravestone the name, at least, of the deceased—often followed by the father’s name. In Greece, a great improvement was to fit the name into an elegiac verse, for a passer-by to stop and read, and perhaps memorize.

Nearly the earliest inscription found in Attica was carved around 600 B.C.:

ΣΕΜΑΤΟΔΕ : ΚΥΛΟΝ : ΠΑΙΔΟΙ
 ΕΠΙΘΕΚΕΝ : ΘΑΝΟΤΟΙ : ΜΤΕΜΑ
 ΦΙΛΕΜΟΣΥΝΕΣ

‘Cylon set up this marker over [his] two dead children, a memorial of [their] dearness’
 (*Inscriptiones Graecae*, 1.472 = *IG*. 2 1.1016)

The meter of this incomplete elegiac couplet is tolerably regular; the text (converted by me into the normal spelling of the Ionic alphabet) is

σῆμα τόδε Κύλων παίδοι ἐπέθηκε θανόντων μνῆμα φιλημοσύνης

The stone-cutter, or Cylon himself, was idiosyncratic in his literacy, using the Old Attic

The style of Thucydides, especially in the public speeches in his history, is very compressed. Dionysius of Halicarnassus (first century B.C.), in his essay on Thucydides, reports that in order to understand this historian’s text, the readers need ἐξήγησις γραμματική, ‘a grammatical commentary.’ Xenophon, on the contrary, wrote simply and clearly.

variety of the Greek alphabet; especially the treatment of the letter N is very irregular.⁵ But they could still expect other Athenians to sound out the letters, and thus hear how the mourning father expressed his love.

The most heart-rending dirge in any literature is David's wail over Saul and Jonathan:

הַצִּבֹּי יִשְׂרָאֵל עַל־בְּמוֹתָיִךְ חָלָל אִיךָ נָפְלוּ גִבּוֹרִים:
/haccəbōy yisrəʔél ʔal-bəmoṭeʔyḵə hələl?l ʔéyḵ nəpəlūw gībbowrīym/

“The glory, Israel, on your peaks is wounded; how have heroes fallen!
Tell it not in Gath; proclaim not in the street of Ashkelon;
lest the Philistines’ daughters rejoice, lest the daughters of the uncircumised gloat.
Mountains in Gilboa, no dew and no rain upon you and fields of harvests; for there
was dropped a shield of heroes—shield of Saul without him anointed in oil.
Without blood of men wounded, without fat of heroes,
Jonathan’s bow did not turn back; and Saul’s sword never returned empty.
Saul and Jonathan, the beloved and the cherished in their life, and in their death
were not parted; they were lighter than eagles, stronger than lions.
Daughters of Israel, weep over Saul, who clothed you in crimson and jewels,
the one that raised up gold on your dress.
How have heroes fallen in the midst of the battle; Jonathan on your mountains
wounded!
I am doubled over you, my brother Jonathan; most cherished were you to me; your
love was wonderful to me, more than love of women.
How have heroes fallen, and the weapons of battle were lost.’ (II Samuel 1:19-27)

The words “How have heroes fallen!” recur at the beginning of a verse and near the middle; they begin the final verse also, with the same terrible words, “how have heroes fallen.”

אִיךָ נָפְלוּ גִבּוֹרִים וַיֵּאָבְדוּ כְלֵי מִלְחָמָה:
/ʔéyḵ nəpəlūw gībbowrīym wayyoʔbedúw kəlèy milḥəməʔh/
‘How have heroes fallen, and weapons of war were lost’

The narrative that introduces the lament (II Samuel 1:18) tells how it was recorded: “And David chanted this chant over Saul and over Jonathan his son. And he told [his followers] to teach the sons of Judah [the chant] ‘the Righteous [one].’” So David’s lament was remembered long enough to reach the anonymous Hebrew historian, the author of Samuel. He copied out verbatim in this history a few poems, which have lasted through the centuries. There remains very little else said or done in that millennium.

David voiced his personal grief and love; for he had not been at the battle. Saul and David were long estranged by Saul’s jealousy toward a younger and even greater warrior

⁵ See my book, *The Indo-European and Semitic Languages: An exploration of structural similarities related to accent, chiefly in Greek, Sanskrit, and Hebrew*: 37, 425.

than himself. David, finally, took refuge from him in the Philistine city of Gath. As all the Philistines mustered for war against Israel, David wanted to join with them; but their princes mistrusted him. So he and his band of followers waited at a distance from the two armies. From a stranger he learned that Israel was defeated, and that Saul and Jonathan were dead.

Public lamentation is more briefly recorded in II Chronicles 35:24–25, after King Josiah was mortally wounded in battle:

And he died and was buried in the graves of his fathers; and all Judah and Jerusalem were in grief over Josiah. And Jeremiah [the prophet] chanted over Josiah; and all the singing men and women said their laments over Josiah—[and continue] to this day; and they made them a rule for Israel, and here they are, written in the [book of] laments.⁶

Public funeral orations were customary in Greece during the time of the finest orators. But only a few of those orations were thought good enough to be copied again and again, and recited in school. Perhaps the best specimen is Lysias' *Ἐπιτάφιος τοῖς Κορινθίων βοήθοις*, pronounced over the Athenian men who died while reinforcing the Corinthians in the war of 395–386 B.C. The speaker, praising the bravery of the dead, dwelt first upon mythical precedents, as far back as the battle against the Amazons at the river Thermodon. But mostly he reviewed the victories in recent wars. He does not say which was the recent battle, fatal to the Athenians now being buried. He consoles their kin: we are all mortal, so it is best for these men to have met death nobly.

At a funeral the most vocal mourners were women, whether or not mentioned in a text. The very last verse of the *Iliad* is

ὥς δὲ γ' ἀμθίεπον τάφον Ἑκτορος ἵπποδάμοιο. (24.804)
'So *they* tended the burial of Horse-taming Hector'

The speakers in the episode up to then were Hector's mother Hecuba, his wife Andromache, and his sister-in-law Helen. Our literary heritage includes no specimen of what must have been said at countless other graves. But one writer of literary prose, Plato, composed a dialogue commemorating the death of Socrates. There the narrator Phaedo, near the beginning (60a), tells how Xanthippe, Socrates' wife—at dawn on the last day of the philosopher's life – shrieked a few words. And at nightfall, when he drank the hemlock, the friends who had been conversing with him lost their self-control and wailed (117c–d).

One funeral speech was so powerful that it made history. After Julius Caesar was stabbed to death in front of the Senate on the Ides of March (44 B.C.), his political ally Mark Antony spoke to a crowd. He pretended to respect, even to admire the conspirators,

⁶ This book, lost long ago, should not be confused with the well-known extant book of Lamentations (over the desolate city of Jerusalem)—which in the Hebrew tradition of synagogues is called by its initial word *אֵיכָה* 'How' (repeated in 2:1 and 4:1). The ancient translation into Greek begins with an attribution (probably mistaken) to Jeremiah.

but deftly turned the common people of Rome against them. Brutus, Cassius, and their followers fled from the city and from Italy.

This crown of Latin oratory was preserved indirectly, by the Greek biographer Plutarch around A.D. 120. Whether or not Plutarch and his intermediate sources kept close to the sense of Antony's words, the Greek write-up won immortality. In the sixteenth century, during the Renaissance, Plutarch's ΒΙΟΙ ΠΑΡΑΛΛΗΛΟΙ 'Parallel Lives' was translated into French by Charles de L'Escluse; and an Englishman, Sir Thomas North, made a secondary (or rather a tertiary or quaternary) version—which Shakespeare drew upon when writing *Julius Caesar* and other dramas.

Private funerals were seldom noted in Roman literature. But the most personal poet, Catullus, was inspired by the death of his brother (whose praenomen is unknown). It happened while each was traveling separately. The poet, when he could, came to the grave and belatedly gave his final offering—of bread and wine, commemorated in elegiac couplets:

Quandoquidem fortuna mihi tete abstulit ipsum,
 Heu miser indigne frater adempte mihi;
 Nunc tamen interea haec, prisco quae more parentum
 tradita sunt tristi munere ad inferias,
 accipe fraterno multum manantia fletu,
 atque in perpetuum, frater, aue ac uale. (101.5–10)

'Inasmuch as fortune has taken away yourself from me,
 Alas, wretched brother, stolen from me undeservedly,
 Now, however, meanwhile, these things which by our parents' custom
 have been handed on—offerings sadly due to those below—
 receive, dripping much with brotherly weeping,
 and forever, brother, hale and farewell'

Here is plain, unembroidered grief—without the wit that livens the poems to Lesbia, the "puella," and those addressed to several male friends.

The Latin biographer Suetonius tells of the death of most of the twelve Caesars, and mentions who (if anyone) delivered the laudatio.⁷ The historian Tacitus, almost in passing

⁷ Tiberius died at a secluded villa offshore (75.3): "corpus ... Romam per milites deportatum est crematumque publico funere" 'the body [of Tiberius] was conveyed to Rome by soldiers and cremated in a public funeral'. His successor Gaius, nicknamed Caligula from boyhood, was murdered by conspirators (58–59): "cadaver eius ... per sorores ab exilio reuersas erutum et crematum sepultumque" 'his cadaver was dug up by his sisters, upon returning from exile, and was cremated and buried'. Also Nero, Galba, Otho, Vitellius, and Domitian were overthrown violently; but some admirers honored the grave of Nero (57). Comparably, in the terrible year of the "four emperors" (Galba 23): "Senatus, ut primum licitum est, statuam ei decreuerat rostratae columnae superstantem in parte fori, qua trucidatus est" 'The Senate, as soon as was allowed, had decreed for him a statue, standing upon the beaked column in the part of the forum where he was slaughtered'. Vitellius was most brutally butchered (17.2): "Tandem apud Gemonias minutissimis

(Ann. 5.1), records “Rubellio et Fufio consulibus [= 29 A.D.] ... Iulia Augusta mortem obiit aetate extrema.... Funus eius modicum, testamentum diu inritum fuit. Laudata est pro rostris a C. Caesare pronepote, qui mox rerum potitus est” ‘... Julia Augusta met death at an advanced age.... Her funeral was modest, her will was long held in abeyance. She was eulogized on the platform by her great-grandson Gaius Caesar, who soon afterward took over the supreme power.’

The most admirable memorial, though preserved only in fragments (*Corpus Inscriptionum Latinarum*, VI 1527, 31670, 37053), is the praise of one devoted wife by her grateful husband. After the funeral (about 6 B.C.), he had his entire speech carved on the wall nearby.⁸ No Egyptian queen from the age of the Pyramids was honored so fittingly.

Mortality is at the heart of culture. The alphabetic writing of Hebrew, Greek, and Latin has preserved some fine specimens of the words spoken over the dead. In the generations since then, most valued were those books which one great author wrote or dictated under the inspiration of God or of the Muse. Even there, much of the experience which the authors drew upon was commemorative: whatever must be recalled about the men or women no longer on earth.⁹

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ictibus excarnifactus atque confectus est et inde unco tractus in Tiberim” ‘Finally, at Gemoniae [Hill], he was butchered and overwhelmed with very tiny blows and dragged from there by a hook into the Tiber’. However, after the murder of Domitian, “cadauer eius ... Phyllis nutrix in suburbano suo Latina uia funerauit” ‘his cadaver ... his nurse Phyllis buried in her suburban home on the Latin Way’ (17.3; cf. 23.1); and as his foster mother, she mixed his remains with the ashes of his niece.

⁸ The deceased was identified, conjecturally, as Turia and the husband as Vespillo, by the great modern historian Theodor Mommsen – among others. This has since been disputed by Marcel Durry, *Éloge funèbre d'une matrone romaine (Éloge dit de Turia)*: 1950. But regardless of the controversy over this one inscription, there was certainly a custom in ancient Rome, after a funeral, to have the laudatio inscribed. For example, *Corpus Inscriptionum Latinarum*, VI 10230, where Murdia is praised by her son; both of them are unknown otherwise.

⁹ This essay was first read aloud by the author, Saul Levin, in 2004 to a conference in Winnipeg. At the LACUS Forum in 2007, my good friend and colleague Toby Griffen has filled in for me, since I was unable to travel.

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ON THE ARGUMENT REALIZATION OF CAUSATIVES

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A NUMBER OF ACCOUNTS HAVE BEEN PROPOSED¹ as to how the causee in a morphological or synthetic causative is overtly realized, particularly how it is marked in a case-marking language. Among them is Comrie's (1975, 1976) case hierarchy account. However, Song (1991, 1996) has recently argued that Comrie's case hierarchy is not valid. The purposes of this paper are to argue that Comrie's case hierarchy does need to be maintained and to predict all the case-marking possibilities related to productive monoclausal causatives. In what follows, I will first briefly discuss Comrie's account and Song's critique of it, and then propose a theory that predicts the different case-marking possibilities related to causatives.

1. COMRIE'S (1975, 1976) CASE HIERARCHY ACCOUNT. Comrie (1975, 1976) observes that languages normally have restrictions on the doubling of syntactic positions. He extends to productive monoclausal causatives the Accessibility Hierarchy or Case Hierarchy in (1), which is established on the basis of the relative accessibility of different grammatical relations to relative clause formation.

- (1) **Accessibility Hierarchy or Case Hierarchy** (Keenan & Comrie 1977:66):
Subject > Direct Object > Indirect Object > Oblique > Genitive >
Object of Comparison (> = 'more accessible than')

On the basis of languages like French and Turkish, Comrie (1976:264–66) proposes four characteristics for the "paradigm case" of causative constructions. First, there is no syntactic restriction on the formation of causative constructions, although semantic restrictions and morphological or idiosyncratic lexical restrictions are possible. Second, doubling on the syntactic positions subject, direct object, and indirect object is forbidden. That is, none of these constituents can occur more than once. Third, "[w]here the restrictions on doubling require that some constituent be removed, it is always the embedded subject that is so removed, either by being omitted or by being demoted down the hierarchy" (265).² Finally, when the embedded subject is demoted down the hierarchy, it is demoted stepwise. That is,

¹ I am grateful to three LACUS reviewers for their insightful comments and constructive suggestions, from which this paper has greatly benefited.

² Comrie (1975, 1976) assumes that the underlying structure of a causative sentence consists of two clauses, a matrix clause and an embedded one. On this assumption, the subject of the matrix clause corresponds to the causer of the action and the subject of the embedded clause corresponds to the person who actually carries out the action. For the sake of convenience, I follow Comrie in this paper by referring to the actual doer as the embedded subject.

it is always demoted to the next-highest position in the hierarchy that has not already been filled. Take Turkish as an example:

- (2) a. Ali **Hasan-i** öl-dür-dü.
 Ali Hasan-DO³ die-CAUS-PAST
 'Ali caused Hasan to die, killed Hasan.'
- b. Dişçi mektub-u **müdür-e** imzala-t-ti.
 dentist letter-DO director-IO sign-CAUS-PAST
 'The dentist made the director sign the letter.'
- c. Dişçi Hasan-a mektub-u **müdür tarafından** göster-t-ti.
 dentist Hasan-IO letter-DO director by show-CAUS-PAST
 'The dentist made the director show the letter to Hasan.'

In (2)a, the embedded subject 'Hasan' is marked with the accusative case because the subject position has already been occupied by 'Ali'. In (2)b, the embedded subject 'director' is demoted to the indirect object position because the subject and direct object positions have already been filled by 'dentist' and 'letter', respectively. Finally, the embedded subject in (2)c is demoted to an oblique position, because in this case all the subject, direct object, and indirect object positions have already been occupied by 'dentist', 'letter', and 'Hasan', respectively.

Although Comrie admits that very few languages, if any, conform exactly to the paradigm case, he maintains that

the value of the paradigm case is still justified by the fact that the vast majority of languages differ from the paradigm case in only one or two respects, and that often this divergence has independent reasons when we look at the syntax of the language as a whole. (1976:264)

2. SONG'S (1991, 1996) CRITIQUE OF COMRIE'S ACCOUNT. According to Song (1991, 1996), the major disadvantage of Comrie's theory lies precisely in the fact that very few languages conform exactly to the paradigm case, a fact that Comrie is aware of, as seen above. Song argues that it is "extended demotion" and "syntactic doubling" (both being Comrie's terms) that should be used as the empirical basis for any theory of causative constructions, not the paradigm case, which is by no means representative of the world's languages. Extended demotion refers to the phenomenon that the subject of the base or embedded verb is not demoted to the next-highest grammatical relation available, but rather demoted further. Extended demotion is attested in a number of languages, e.g., Dutch, Finnish, French, Gilyak, Hindi, Hungarian, Marathi, Malayalam, Sanskrit, and Urdu. For example, in (3), the embedded subject 'bricklayers' is demoted not to the indirect object position (which is the next-highest grammatical relation available), but to an oblique position of this Finnish

³ Abbreviations: ACC=accusative; AOR=aorist; CAUS=causative; DAT=dative; DEC=declarative; DO=direct object; FUT=future; INSTR=instrumental; IO=indirect object; LOC=locative; NOM=nominative; OBL=oblique; PFV=perfective aspect; PL=plural; POSS=possessive; POSTP=postposition; PURP=purpose; SG=singular; SUBJ=subject; TOP=topic marker.

sentence, as shown by the fact that ‘bricklayers’ is marked with the instrumental or adessive case.

- (3) Minä rakennutin talo-n muurarei-lla.
 I build-CAUS house-DO bricklayers-INSTR [i.e., ADDESSIVE]
 ‘I make the bricklayers build the house.’ (Comrie 1976:273)

In addition to the fact that extended demotion is attested in many languages, syntactic doubling—doubling on grammatical relations—is also attested in a number of languages. In particular, doubling on indirect object is very common. For example, in French the embedded subject can be demoted to an indirect object position, although apparently there is already another indirect object.⁴ Specifically, as shown in (4), the embedded subject ‘Jean’ and the embedded indirect object ‘director’ both bear the grammatical relation of indirect object.⁵ In addition to doubling on indirect object, doubling on direct object is attested in some languages as well, as illustrated by Evenki in (5).

⁴ French allows causative constructions with two indirect objects, provided they are not adjacent, although the alternative construction with *par* ‘by’ for the embedded subject is preferred.

⁵ Although the causative element *faire* of French causatives is a verb on its own, there is evidence that *faire* and the base or embedded verb form a single unit. For example, unlike the bi-clausal sentence in (i)a, which allows a negative to modify the lower clause, the *faire*-causative does not permit the same negative to occur in between and modify the infinitive verb alone, as shown in (i)b (from Horn 1978:198, with glosses added).

- (i) a. Il m’a forcé à (ne pas) venir.
 he me-CLITIC-has forced to not step come
 ‘He forced me (not) to come.’
 b. Il m’a fait (?ne pas) venir.
 he me-CLITIC-has made not step come
 ‘He made me (?not) come.’

Similarly, as shown in (ii)a, *le/la*—an object clitic in French that generally attaches to the beginning of a VP that “underlyingly” dominates it (as illustrated in (iii))—cannot appear between *faire* and the infinitive verb. Instead, it must cliticize onto *faire*, as shown in (ii)b (or more exactly, in this case the object clitic attaches to a tense-bearing auxiliary verb *avoir*, which corresponds to English *have*) (from Horn 1978:199 [ii] and 198 [iii], with glosses added).

- (ii) a. *J’ai fait le manger à Jean.
 I-have made it-CLITIC eat to Jean
 Intended: ‘I had Jean eat it [the cake].’
 b. Je l’ai fait manger à Jean.
 I it-CLITIC-have made eat to Jean
 ‘I had Jean eat it [the cake].’
 (iii) a. Je veux/peux le manger.
 I want to/can it-CLITIC eat
 ‘I want to/can eat it [the cake].’

- (4) Doubling on indirect object; example from French
 Je ferai écrire à Jean une lettre au directeur.
 I make-FUT write to Jean a letter to director
 'I will make Jean write a letter to the director.' (Comrie 1975:12, glosses added)
- (5) Doubling on direct object; example from Evenki
 Ynīn-in xuty-wī awun-mī baka-pkān-yn.
 mother-his son-DO cap-DO find-CAUS
 'The (lit. his) mother made her son find his cap.' (Konstantinova 1964:157–58, via Comrie 1976:285)

Song (1991, 1996) further argues that both causative and noncausative constructions are subject to "NP density control," a requirement that limits the number of core NPs per simplex sentence. In his view, deviations from the paradigm case (like syntactic doubling and extended demotion) should be viewed as ways that languages utilize to implement NP density control.

Song (1991:89) concludes that the Case Hierarchy and the paradigm case "do not offer any insight into how languages cope with the NP overdensity problem created in causative constructions by the presence of the causer NP argument" and that there is no need for the Case Hierarchy, the paradigm case, and the notion of demotion in accounting for causative constructions.

Although Song (1991, 1996) rightly points out that Comrie's paradigm case is not typical of causative constructions, there are several problems with his NP density control account. First, this account does not have any predictive power. Specifically, it does not predict the NP density control methods that a particular language employs; neither does it predict all the NP density control mechanisms that are used cross-linguistically. Second, while extended demotion can be viewed as a way to control NP density and to limit the number of core NPs per simplex sentence, syntactic doubling, especially doubling on direct object, can hardly be viewed in the same way because doubling on direct object actually increases the number of core NPs and enhances the possibility of ambiguity. Finally, as will be seen below, although Song disapproves of Comrie's Case Hierarchy, the Hierarchy is actually full of insight and is indeed needed to account for the case-marking possibilities of causative constructions.

3. PREDICTING CASE-MARKING POSSIBILITIES.

3.1 CASE HIERARCHY AND THE PRINCIPLE OF DEMOTION. Recall that Song (1991) concludes that Comrie's Case Hierarchy does not offer any insight into how languages deal with the NP overdensity problem caused by the causative construction. However, there is evidence that the Hierarchy is indeed needed to account for the case-marking possibilities of causative constructions. Crucially, although doubling on direct object is allowed in

(iii) b. *Je le veux/peux manger.
 I it-CLITIC want.to/can eat
 Intended: 'I want to/can eat it [the cake].'

some languages, neither the causee (i.e., the embedded subject) nor the base or embedded direct object of a monotransitive verb can be realized as the second subject of a monoclausal causative construction.⁶ For example, although Imbabura Quechua allows doubling on direct object ((6)a), neither the causee nor the base direct object can be in the nominative form, as shown in (6)b–c:

- (6) a. Taita-ca wambra-ta papa-ta alla-chi-rca.
 Father-TOP boy-ACC potato-ACC dig-CAUS-3PAST
 'Father made the boy dig potatoes.' (Jake 1983:260)
- *b. Taita-ca wambra papa-ta alla-chi-rca.
 Father-TOP boy potato-ACC dig-CAUS-3PAST
 Intended: 'Father made the boy dig potatoes.'
- *c. Taita-ca wambra-ta papa alla-chi-rca.
 Father-TOP boy-ACC potato dig-CAUS-3PAST
 Intended: 'Father made the boy dig potatoes.'

This demonstrates that when the causee and the base direct object compete for the accusative case of an accusative language and when the former loses, the causee cannot bear a case higher than the one for which it is competing although it may bear a case lower than the accusative case, as shown in (6)d.⁷

- (6) d. Taita-ca wambra-man papa-ta alla-chi-rca.
 Father-TOP boy-DAT potato-ACC dig-CAUS-3PAST
 'Father let [had] the boy dig potatoes.' (Jake 1983:260)

Therefore, the Case Hierarchy, which was originally proposed on the basis of the formation of relatives, is also valid for causatives. Given the above data from languages like Korean and given the fact that there are instances of syntactic doubling and extended demotion, the following principle is proposed.

- (7) **Principle of Demotion:** In forming monoclausal causatives, if A and B compete for a case and if A wins, then B can only bear a case lower than the one A gets; if A and B compete for a case and if the competition ends in a tie, both A and B get the same case.

⁶ Although Korean periphrastic causatives apparently allow the causee to be marked with the nominative case, this use arguably involves a biclausal causative, not a monoclausal one. We will return to this in section 4.

⁷ When the causative of a language allows case-marking alternations, the different case-marking patterns normally convey a subtle difference in meaning. For example, (6)a involves an accusative causee, and conveys coercive causation and lack of volition and control on the part of the causee. However, when the causee is marked with the dative case in (6)d, the sentence expresses permission or indirect or non-coercive causation. A similar contrast can be found in two of the Japanese examples below, namely (8) and (9).

The above principle suggests that when demotion occurs, it does not necessarily proceed stepwise down the case hierarchy. Importantly, by introducing the possibility of ending in a tie, the Principle of Demotion allows us to integrate Comrie's paradigm case and deviations from it.

3.2. CASE-MARKING POSSIBILITIES WITH RESPECT TO CAUSATIVES. In this subsection, I would like to propose a theory that predicts all the different case-marking possibilities with respect to productive monoclausal causatives. The Case Hierarchy and the Principle of Demotion are integral parts of this theory. It should be pointed out that the Case Hierarchy itself only says that subject ranks over direct object, direct object over indirect object, and indirect object over obliques. The Hierarchy does not entail that demotion has to proceed stepwise. In fact, the mechanisms of demotion are handled by the Principle of Demotion.

In addition to the Case Hierarchy and the Principle of Demotion, the following two assumptions are made. First, when the causer licensed by the causative construction competes with the subject of the base verb for the subject of the monoclausal causative, the causer always wins as a result of the fact that it is the most prominent argument of causatives. Second, after the realization of the causer as the subject of the causative and when the causee (i.e., the subject of the base verb) *needs to* compete with *another* grammatical relation of the base verb, the causee should, first of all, try to compete for the lowest core (or non-oblique) grammatical relation licensed by the base verb that has not been utilized by the causer. The rationale behind this assumption is that as the causee is a core argument of the causative construction, it should try to compete for a core grammatical relation *although it may end as an oblique*. Meanwhile, it should be noted that although the causative morpheme is the morphological head of a productive causative, it is also true that the productive causative is built upon a base verb. Therefore, from the perspective of argument realization, the argument structure of the base verb should also be reflected, if possible. To keep the argument structure of the base verb as much as possible, it is necessary for the causee to compete for the lowest core grammatical relation licensed by the verb, if there is no vacant higher grammatical relation available. As seen below, with these two assumptions, the Case Hierarchy, and the Principle of Demotion, all the different case-marking possibilities with respect to productive monoclausal causatives can be predicted.

3.2.1 INTRANSITIVE BASE. The first cases to be examined are those where the base verb is intransitive. In such cases, the causer licensed by the causative construction obtains the subject position after competing with the subject of the base verb. After that, the causee, i.e., the subject of the base verb, need not compete for the next position down the case hierarchy, as the verb is intransitive. However, by the case hierarchy, it is possible for the causee to bear the following cases: the case for direct object, the case for indirect object, and the case for an oblique NP. As can be seen below, all these possibilities are borne out.

First, in languages like Chamali, Chamorro, Chicheŵa, Finnish, French, Hungarian, Japanese, Korean, Marathi, Sanskrit, Songhai, Tagalog, and Turkish, the causee can be marked as a direct object, and (8) is such an example from Japanese:

- (8) Taroo-ga Ziroo-o tomar-ase-ta.
 Taro-NOM Jiro-ACC stop-CAUS-PAST
 'Taro made Jiro stop.' (Shibatani 1976:18)

Second, in languages like Japanese and Korean, the causee can also be marked as an indirect object. This is shown in (9), which, like (8), is also from Japanese:⁸

- (9) Zyon-wa Biru-ni ik-ase-ta.
 Zyon-TOP Biru-DAT go-CAUS-PAST
 'Zyon had Biru go.' (Shibatani 1973:42)

Finally, in languages like Chamali, Gilyak, and Malayalam, the causee can be marked with an oblique case, and (10) is such an example from Malayalam:⁹

- (10) Amma kuṭṭiye-koṇṭə nīlattə uṟuḷik'k'um.
 mother child-POSTP floor-LOC roll-CAUS-FUT
 'Mother will make the child roll on the floor.' (Alsina & Joshi 1991:11)

3.2.2. MONOTRANSITIVE BASE. The cases of the second set are those where the base verb of a causative is monotransitive. In such cases, the causer of the causative construction first competes with the subject of the base verb for the subject of the causative. After the causer wins the subject grammatical relation, the causee has to compete with the direct object of the base verb for the direct object of the causative construction. In this case, there are three possible outcomes. First, if the causee loses in the competition, the direct object NP of the base verb assumes the direct object position of the causative, and by the principle of demotion the causee can only bear the case for an indirect object NP or the case for an oblique NP. This possibility is borne out. As shown in (11), Japanese allows the causee ('Hanako' in this case) to be realized as the indirect object when the base verb is monotransitive. This way of realizing the causee is also attested in Dutch, French, Hindi, Quechua, Songhai, Tagalog, Turkish, and Urdu.

- (11) Taroo-wa Hanako-ni zibun-no huku-o ki-sase-ta.
 Taro-TOP Hanako-DAT self-POSS clothes-ACC wear-CAUS-PAST
 'Taro made Hanako put on his/her own clothes.' (Shibatani 1976:20)

In addition, as shown in (12), French allows the causee to be realized as an oblique when the base verb involved is monotransitive:

⁸ Related to the case-marking alternations of (8) and (9), it should be pointed out that the theory proposed in this paper does not make any predictions as to whether a language allows such alternations. What is crucial, however, is the fact that from a cross-linguistic and typological point of view, these different case-marking possibilities are within the predictions of our proposal.

⁹ As observed by one of the reviewers, the use of "POSTP" in the gloss of (10) is not that informative. However, at the same time, I would like to stress the fact that the causee in this example is indeed marked as oblique.

- (12) Je ferai manger les gateaux par Jean.
 I make.FUT eat the cakes by Jean
 'I shall make Jean eat the cakes.'

The same pattern is also found in Chicheŵa, Dutch, Finnish, Gilyak, Hindi, Hungarian, Malayalam, Marathi, Sanskrit, and Urdu.

Second, if the competition between the causee and the direct object NP of the base verb ends in a tie, both bear the case for direct object. This is attested in a number of languages, e.g., Amharic, Chicheŵa, Dutch, Hebrew, Korean, Malayalam, Marathi, Quechua, Sanskrit, and Southern Lappish. Example (13), from Chicheŵa, illustrates this pattern:

- (13) Nüngu i-na-phík-itsa kadzidzi maüngu.
 porcupine SUBJ-PAST-cook-CAUS owl pumpkins
 'The porcupine made the owl cook the pumpkins.'

Finally, if the causee wins the competition and takes the direct object position, then the direct object NP of the base verb can only bear the case for an indirect object NP or the one for an oblique NP. With respect to the first possibility, namely that the causee is realized as direct object and the base direct object as indirect object, more research is needed to determine whether linguistic data can bear this out. However, as for the second possibility (the causee being realized as direct object and the base direct object as an oblique), it is borne out by languages like Babungo, Chamorro, Jarawara, Tolai, and Warekena and is illustrated in (14) with an example from Chamorro:

- (14) Ha na'taitai häm i ma'ëstru ni esti na lebblu.
 3SG CAUS-read IPL the teacher OBL this book
 'The teacher made us read the book.' (Alsina & Joshi 1991:3)

3.2.3 DITRANSITIVE BASE. The last cases to be examined are those where the base verb is ditransitive. In such cases, the causer of the causative construction first competes with the subject of the base verb for the subject of the causative. After the causer wins the subject grammatical relation, the causee has to compete with the indirect object of the base verb for the indirect object of the causative construction, because the indirect object position is the lowest core grammatical relation licensed by the base verb. In this case, there are again three possible outcomes. First, when the causee loses, the direct object NP of the base verb assumes the direct object position of the causative, the indirect object NP of the base verb assumes the indirect object position of the causative, and the causee bears a case for an oblique NP. This possibility is borne out by French, Punjabi, and Turkish; (15), in French, illustrates this pattern.

- (15) Je ferai écrire une lettre au directeur par Jean.
 I make-FUT write one letter to director by Jean
 'I shall get Jean to write a letter to the headmaster.' (Comrie 1975:13, glosses added)

Second, when the competition between the causee and the indirect object NP of the base verb ends in a tie, both bear the case for indirect object. This pattern is found in French, Georgian, Punjabi, Tagalog, and Turkish, and is illustrated in (16) in French:

- (16) Je ferai écrire à Jean une lettre au directeur.
 I make-FUT write to Jean a letter to director
 'I will make Jean write a letter to the director.' (Comrie 1975:12, glosses added)

Finally, when the causee wins the competition and takes the indirect object position, the indirect object NP of the base verb can only bear the case for an oblique NP. This possibility is borne out by Georgian, as shown by (17):

- (17) Mama-m mašavleblis-tvis mdivan-s çeril-i da-a-čer-in-a.
 father-SUBJ teacher-for secretary-IO letter-DO PFV-CAUS-write-CAUS-AOR
 'Father made the secretary write the letter to the teacher.' (Comrie 1976:283)

4. APPARENT COUNTEREXAMPLES FROM KOREAN. On the assumptions made in this paper (see section 3.2), the causee is not expected to be able to be marked with the nominative case. This, however, is challenged by the Korean data in (18) below, in which the causees are marked nominative:¹⁰

- (18) a. Chelswu-ka Swuni-ka chayk-ul ilk-key ha-ess-ta.
 Chelswu-NOM Swuni-NOM book-ACC read-KEY do-PAST-DEC
 'Chelswu made Swuni read the book.' (Song 2005:126)
 b. Chelswu-ka Swuni-ka hakkyo-ey ka-key ha-ess-ta.
 Chelswu-NOM Swuni-NOM school-LOC go-KEY do-PAST-DEC
 'Chelswu made Swuni go to school.' (Song 2005:128)

I argue that the above Korean examples are just apparent counterexamples to my proposal. This is because, on the one hand, the proposal concerns monoclausal causatives alone and, on the other hand, there is evidence that the two examples in (18) are biclausal causatives. The evidence comes from the fact that as shown in (19)a, the negative prefix *an-* only negates the part suffixed with *-key* when it is attached to the main predicate of (18)a, for example. This forms a clear contrast with morphological causatives, in which the use of *an-* negates the causative morpheme, as shown in the Korean example in (19)b:

- (19) a. Chelswu-ka Swuni-ka chayk-ul an-ilk-key ha-ess-ta.
 Chelswu-NOM Swuni-NOM book-ACC not-read-KEY do-PAST-DEC
 'Chelswu made Swuni not read the book.'

¹⁰ As pointed out by a LACUS reviewer, examples like (18) are much more acceptable when the sentence-initial NP is marked with the topic marker *-(n)un*.

- b. Chelswu-ka Swuni-lul chayk-ul an-ilk-hi-ess-ta.
 Chelswu-NOM Swuni-ACC book-ACC not-read ['wear' in Song]-CAUS-PAST-DEC
 'Chelswu did not make Swuni read the book.' (Song 2005:134)

This indicates that while (19)b is a monoclausal causative, (19)a and (18)a are biclausal causatives. Likewise, (18)b is arguably biclausal. If both of the examples in (18) are biclausal, the use of the nominative case on the causees of the two sentences does not pose a problem for our proposal, which only concerns monoclausal causatives.

5. CONCLUSIONS. On the basis of the preceding discussions, two conclusions can be made. First, contra Song (1991, 1996), Comrie's Case Hierarchy is well-motivated and should be maintained. Second, with the Case Hierarchy and the Principle of Demotion, all the case-marking possibilities with respect to productive monoclausal causatives can be predicted, although more research is needed to determine the validity of one of these possibilities.

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SOCIAL AND REGIONAL VARIATION IN WOMEN'S MARITAL SURNAME CHOICES

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FEMINISTS IN NORTH AMERICA have been discussing the issue of marital surnames since the mid nineteenth century. Until the 1970s, however, very few women challenged social norms to the point of insisting on the use of their birth name rather than their husband's name as their surname after marriage. One offshoot of the feminist movement of the 1970s and 1980s was an increased awareness of and objection to the patriarchal tradition which demanded that a woman relinquish her surname for that of her husband when she married.

Published studies repeatedly show that only a very small minority of women defy convention and retain their birth name when they marry. For example, Brightman (1994) found that just 10% of women used something other than their husband's surname. Johnson and Scheuble (1995) found even fewer women making such choices. Specifically, they found that in their main sample ("mother's generation", ages 31–67, currently married) only 1.4% of women made non-conventional choices, compared to 4.7% in a sample of their married offspring, aged 19 and older. Finally, Scheuble, Klingemann, and Johnson, examining wedding announcements from the *New York Times* between 1966 and 1996, note that overall, 14% of women made non-conventional naming choices, but "the proportion of women making a non-conventional last name choice increased dramatically between 1966 and 1996" (2000:109). Studies which ask unmarried women whether they plan to change their surname upon marriage indicate that the majority do plan to change their surname when they marry. For example, Atkinson (1987) reports that 35% of women in her Canadian sample intended to keep their surname upon marriage, while Scheuble and Johnson (1993) report in their U.S. sample that just 20% plan to opt for a choice other than taking their husband's surname. The present paper examines the choice to keep or change one's surname based on gender, age, occupation, and nationality of respondents to an anonymous online survey.¹

1. **METHODOLOGY.** The data for this paper are drawn from an online survey of marital naming choices and courtesy titles I conducted in 2006–2007. I posted the survey on the Survey Monkey website (www.surveymonkey.com) and then advertised it by sending emails to all of my contacts and by posting notices on a number of listservs, including LINGUIST LIST (with over 20,000 subscribers worldwide) and the listservs of the American Name

¹ I thank my two graduate assistants, Alexis Poe Davis, who formatted and mounted the online survey, and Myleah Kerns, who has performed miracles organizing the very messy data into workable spreadsheets.

Society, the International Gender and Language Association, and Feminists in Linguistics. I encouraged people to forward my announcement to as many other listservs and individuals as they saw fit. This resulted in a sample of 2,641 individuals who responded to the questionnaire. Based on the data provided, 2123 women and 369 men answered the survey, with 149 persons not indicating their gender. Residents of the United States comprise 75% of the sample, residents of Canada 10%, and residents of other countries 15%. Using this sample method does not produce a true representative sample; nevertheless, it does sample a wider range of people than would be possible using only a paper survey distributed in one region or to one demographic group.

Part A of the survey duplicates that used in Lillian (1995). Respondents are asked to pretend that they are doing a mailing to the female clients of the company they work for. They are presented with short descriptions of 15 different women and asked to select how they would address them. Varying sorts of information about age, occupation, and relationship status are given for the 15 women in these scenarios, but the woman is always identified by first and last name, and where a spouse or partner is identified, his or her name is also given. Respondents must then select which form of address they would use. The following is a sample scenario from the survey:

- (1) Julia Allen is a 23-year-old university student. She is not married but she has been living with her boyfriend, Fred Rogers, for two years. You would address the letter to:

Miss Allen	Ms. Allen	Mrs. Allen
Miss Rogers	Ms. Rogers	Mrs. Rogers

Lillian (2007) presents the results of Part A of the survey with respect to choices of courtesy titles. The present paper focuses on Part B of the survey.

Part B of the survey asks for demographic information and poses open-ended questions, including ones asking whether respondents did or didn't change their surname (if they are married) or whether they would or would not change it (if they are not currently married). The responses to these questions constitute "messy" data for a number of reasons. First, the questions were inadvertently not explicit enough about what constitutes changing one's surname. My expectation was that people would answer yes to changing their surname if they had done any of the following: delete their surname and replace it with that of their spouse, add their spouse's surname but retain their own surname as a middle name, or hyphenate their surname with that of their spouse. This is consistent with the way Johnson and Scheuble (1995) characterize conventional naming choices and it is consistent with the ways that respondents answered similar questions in Atkinson (1987). However, many respondents interpreted changing as only encompassing the first of those conditions. As a result, people gave answers such as, "No, I didn't change my surname. I kept it as a middle name and added my husband's name after it." Because of the confusion over what was meant by changing one's surname, it was impossible to electronically sort and tabulate these data. I therefore had to manually read, interpret, and classify the responses of each of the 2,367 people who had identified themselves by gender and who answered one or both

Respondent Age	Didn't change	Yes, changed	Hyphenated (% of Yes)
16-19 (n=1)	100%	0%	—
20-29 (n=195)	19%	81%	6%
30-39 (n=340)	32%	68%	8%
40-49 (n=246)	27%	73%	9%
50-59 (n=306)	22%	78%	4%
60-69 (n=144)	15%	85%	1%
70+ (n=19)	5%	95%	0%
Total (n=1251)	24% (n=302)	76% (n=949)	6% (n=55)

Table 1. Married women's surname choices.

of these questions. Furthermore, many people gave more than one answer to the question about name choices if they had been married more than once or if they were divorced and anticipated possibly marrying again. Finally, some women report that they have changed their surname for some purposes, but continue to use their own surname for others. The comment of the following respondent illustrates this pattern: “I used my maiden name professionally and my husband’s name socially.” As a result of these complications and the degree of interpretation required to classify some of the answers, the data are not suitable in their present form for statistical analysis. Thus, in what follows, I report counts in raw percentages and I interpret those figures in light of the comments and explanations offered by the respondents. Respondents who had not self-identified as either female or male were omitted from the analysis.

2. RESULTS. Respondents were asked to answer one of two questions, depending on whether or not they were married. If they were married, they were asked whether or not they had changed their name when they married and why they made the choice they did. If they were not married, they were asked whether or not they would change their surname if they married and why or why not. Some people chose to answer both questions and when they did so, they often suggested that they might not make the same choice the next time around. Furthermore, some people reported on the choices they had made for each of two or three subsequent marriages. Consequently, rather than reporting on how many individuals kept their surname or changed it, I report on the total number of marriages in which the surname was changed, and the total number of people who reported that they would or would not change their name, even if they are currently married.

2.1. RESULTS BY GENDER AND AGE. **Table 1** reports the percentage of women who did not change their surname and the percentage of those who did change their surname when they married, by age. Changing the surname includes any of the following: deleting one’s birth name and replacing it with the spouse’s name, placing one’s birth name as a middle name and adding the spouse’s surname, and hyphenating the two surnames. The fourth

Respondent Age	Wouldn't change	Would change	Undecided
16-19 (n=79)	20%	60%	20%
20-29 (n=465)	33%	51%	16%
30-39 (n=207)	54%	28%	18%
40-49 (n=120)	58%	27%	15%
50-59 (n=108)	69%	24%	7%
60-69 (n=58)	64%	29%	7%
70+ (n=13)	54%	46%	0%
Total (n=1050)	45% (n=471)	40% (n=425)	15% (n=154)

Table 2. Women: Would/wouldn't change surname if married.

column of **Table 1** gives the figure for women who hyphenated as a percentage of those who changed their surname. For all age groups, hyphenation remains the choice of only a small minority of women. Figures in all tables have been rounded up or down to the nearest whole number, except in the case of .5, in which case the decimal is reported.

Overall, 24% of women reported that they did not change their surname when they married, but the figures vary considerably by age. The group least likely to change their surname was women in their 30s, with 32% keeping their surname. This figure drops gradually by decade to a low of just 5% for women over 70. Since the practice of women retaining their surname was quite rare until the 1970s and 1980s, it stands to reason that women who had already married by then had not retained their surname. What is more surprising in this table is that while 32% of women in their 30s kept their surname, only 19% of women in their 20s did so. This suggests that there may be a reversal of the trend toward surname retention.

Table 2 presents results of the question "If you have never been married, or if you are not currently married, would you change your surname if you got married?" Overall, 45% of women report that they would not change their surname. This figure is up from the figure of 20% of women in Scheuble and Johnson (1993) and the 35% of women in Atkinson (1987) who said that they would not change their surname if they married. The likelihood that a woman would keep her own surname increases with every age group up to age 69. With the exception of the oldest respondents, the older a woman gets, the less likely she is to want to change her name. Answers to the open-ended questions in the survey indicate that once a woman is professionally established she is less likely to change her name upon marriage. Furthermore, women report being more attached to their own name as they get older and they see less reason to change it for marriage.

Comparing the figures from **Tables 1** and **2**, however, one can observe an apparent disconnect between what women report as their intention with respect to name retention and what they end up doing. Specifically, while nearly 45% of women reported that they would not change their surname, in actuality, only 24% did not change it when they married. The gap between intention and practice holds for every age group and actually widens as one goes up the age scale. For example, for 20-29 year olds, 33% say they wouldn't change, while

Respondent Age	Didn't change	Yes, changed	Hyphenated (% of Yes)
16-19 (n=0)	—	—	—
20-29 (n=20)	90%	10%	50%
30-39 (n=42)	93%	7%	33%
40-49 (n=28)	93%	7%	100%
50-59 (n=39)	100%	0%	—
60-69 (n=21)	100%	0%	—
70+ (n=5)	100%	0%	—
Total (n=155)	95% (n=148)	5% (n=7)	57% (n=4)

Table 3. Married men's surname choices.

Respondent Age	Wouldn't change	Would change	Undecided
16-19 (n=10)	50%	0%	50%
20-29 (n=71)	75%	7%	18%
30-39 (n=40)	88%	2%	10%
40-49 (n=21)	90%	10%	0%
50-59 (n=13)	92%	0%	8%
60-69 (n=6)	83%	0%	17%
70+ (n=1)	100%	0%	0%
Total (n=162)	80% (n=130)	5% (n=8)	15% (n=24)

Table 4. Men: Would/wouldn't change surname if married.

just 19% really didn't change, but for 60-69 year olds, 64% say they would not change, yet only 15% actually didn't change.

Part of this difference between intended and actual patterns of name retention can be attributed to women who may have changed their name when they married and then later regretted the decision or otherwise felt it would be inappropriate to change it if they married in future. This is particularly true for women 40 and over, as the following quotation illustrates: "I did. I still sometimes regret doing it. Although I love my husband and have gotten used to his last name by now, I am not sure I would do it again."

The figures for the male respondents, reported in **Tables 3 and 4**, are somewhat simpler than those for the females. Married men retained their surname unaltered in 95% of cases. Seven males (5%) reported that they had in some manner changed their surname, four of these adopting a hyphenated form. No men over 50 changed their surname in any way. Among unmarried men, 80 % said they would not change their name, 5% said they would be willing to change it, while 15% said that they might be willing to consider changing it. Only two of the men willing to consider changing were over 50.

In the written responses, the most frequent explanation by men for not changing their name was some variation on the statement "I am a man." In fact, variations on this comment occurred 67 times in the data. Some are quite bald: "No. I'm male... enough said." Others are more nuanced: "No, I wouldn't because I am a man and, while liberal about most things, am quite traditional when it comes to the convention of changing names." or, "No, because I am a man and it is so rare that it would cause more confusion than it would be worth. Though I would probably be willing, though not eager to use a hyphenated name." Although a few men were fairly adamant, such as the one who wrote "no—men don't!", none were downright hostile in expressing their views, and many expressed a recognition that their wife might not want to or need to change her surname. This is in marked contrast with the results of Atkinson (1987), in which a number of men were quite hostile to the idea of changing their name or of having their wife keep her own surname. It seems that even though few men actually take the step of changing their own surname, more are willing now to consider patterns other than having their wife obligatorily change hers.

2.2. RESULTS BY OCCUPATION AND NATIONALITY: MARRIED WOMEN. Respondents to the survey were asked an open-ended question about their occupation, and then these specific responses were coded and grouped into ten main occupational groups. Some occupations had too few respondents to list separately, so they are grouped together under 'other'. In general, blue-collar workers are under-represented in the survey, in part because so many of the respondents saw the survey on academic and professional listservs and then forwarded it to their friends and colleagues, who may also have been in similar occupational categories. **Tables 5** and **6** show, by occupation, the responses of Canadian and American women to the question, "If you are married or if you have ever been married, did you change your surname when you married?" Women's decisions to change or keep their surname vary considerably by occupation and nationality. Specifically, in seven of the ten occupational groups, Canadian women are more likely than American women to retain their surname upon marriage. These seven occupational groups consist of the categories of artist/writer, business, K-12 teacher, post-secondary educator, professional (other than those specified), science/technical, and stay-at-home mother. For the categories of medical and general 'other', Canadian and American women change their name with almost identical frequency, and for the student category, more American than Canadian women kept their surname, but numbers of respondents were very small, particularly for Canadian students, so these figures must be viewed with caution.

For both nationalities, academic women (post-secondary educators) were the most likely to keep their surname when they marry. In Canada, 57% of academic women kept their own surname, while in the U.S., 39% kept their surname. In the U.S., women working in science and technology kept their surname at a rate nearly equal to that of academic women, while women in those occupations in Canada kept their name at a rate of 50%. Academics, as well as many of the people working in science and technology fields, require post-graduate degrees and they often publish and present papers, thus establishing a reputation that is closely linked with their name. This means that many of them are reluctant to change their name for any reason. Surprisingly, women in the medical professions are the

Occupation	Didn't change	Yes, changed	Hyphenated (% of Yes)
Educ(Post-sec) (n=35)	57%	43%	20%
Science/Tech (n=6)	50%	50%	0%
Artist/writer (n=6)	50%	50%	0%
Stay-at-home (n=4)	50%	50%	0%
Educ(K-12) (n=13)	31%	69%	0%
Business (n=32)	25%	75%	0%
Professional (n=16)	25%	75%	8%
Medical (n=13)	8%	92%	0%
Student (n=1)	0%	100%	0%
Other (n=24)	17%	83%	10%
Total (n=150)	33% (n=50)	67% (n=100)	6% (n=6)

Table 5. Canadian married women's surname choices by occupation.

Occupation	Didn't change	Yes, changed	Hyphenated (% of Yes)
Educ(Post-sec) (n=215)	39%	61%	8%
Science/Tech (n=97)	38%	62%	6%
Student (n=77)	32%	68%	8%
Artist/writer (n=37)	27%	73%	4%
Educ(K-12) (n=99)	20%	80%	8%
Professional (n=132)	14%	86%	9%
Business (n=177)	9%	91%	5%
Stay-at-home (n=75)	9%	91%	1%
Medical (n=66)	8%	92%	5%
Other (n=52)	38%	62%	6%
Total (n=1027)	22% (n=223)	78% (n=804)	6% (n=48)

Table 6. American married women's surname choices by occupation.

least likely to keep their surname, with only 8% in both countries reporting that they had kept their surname.

A relatively small percentage of married women in both countries opted to hyphenate their surname, but hyphenation seems overall to be more popular in the U.S. than in Canada. It may be that some U.S. women opt for hyphenation as a compromise between completely changing their name and keeping only their own surname, while Canadian women prefer simply to retain their name without attaching their husband's name at all.

Occupation	Wouldn't change	Would changed	Undecided
Science/Tech (n=5)	100%	0%	0%
Educ(Post-sec) (n=15)	87%	7%	7%
Professional (n=13)	85%	8%	8%
Medical (n=9)	67%	22%	11%
Business (n=14)	57%	36%	7%
Student (n=28)	57%	2%	2%
Educ(K-12) (n=11)	46%	18%	37%
Other (n=10)	40%	30%	30%
Artist/writer (n=4)	25%	25%	50%
Stay-at-home (n=0)	—	—	—
Total (n=109)	>63% (n=69)	>19% (n=21)	>17% (n=19)

Table 7. Canadian women by occupation. (Row totals may not equal 100% due to rounding.)

2.2. RESULTS BY OCCUPATION AND NATIONALITY: HYPOTHETICAL MARRIAGE. **Tables 7 and 8** show the figures for responses to the hypothetical question, “If you have never been married, or if you are currently unmarried, would you change your surname if you got married?” In some cases, married women answered this question as well as answering the question for married women. Many of these women indicated that while they changed their name the first time they married, they would not do so if they were ever to marry again.

In six occupational groups Canadian women are more likely than American women to retain their surname if they marry at some time in the future. Four of these categories, namely business, post-secondary education, professional, and science/technology, correspond with categories in which Canadian married women did keep their surname at a higher rate than American women. In two other categories, medicine and student, Canadian women also show a higher likelihood than American women of keeping their own name, while in two, stay-at-home mother and other, the two national groups are almost the same. Only in the occupations of artist/writer and K-12 teacher did American women report a greater likelihood than Canadian women of keeping their own surname. For Canadian women in these occupations, there was a very high rate of uncertainty about what they would do with their name if they married.

For both nationalities, women predict that they will retain their surname at a much higher rate than they actually do retain it. One explanation for this difference is revealed in the comments written by the respondents. Many women who answered the survey had married in the 1960s or earlier, when it was still widely believed that women were legally required to take their husband's surname. At least some of these women indicate that they would not do the same again, now that they know they have a choice. For some women who are or who have been married, the choice not to change their name again is practical. “I have a professional identity in that name and wouldn't change it again if I remarried.”

Occupation	Wouldn't change	Would changed	Undecided
Educ(Post-sec) (n=104)	72%	17%	11%
Artist/writer (n=31)	55%	29%	16%
Educ(K-12) (n=63)	54%	41%	5%
Science/Tech (n=39)	54%	46%	0%
Professional (n=103)	48%	32%	20%
Business (n=96)	48%	38%	14%
Other (n=59)	42%	49%	9%
Medical (n=47)	32%	60%	8%
Student (n=252)	31%	54%	15%
Stay-at-home (n=4)	0%	100%	0%
Total (n=798)	45% (n=361)	42% (n=337)	13% (n=100)

Table 8. *American women by occupation.*

For others it is ideological. “No—I would not change my name—I feel much stronger in myself—not dependent on a man for my status in society.” Nevertheless, in spite of their apparent intention to keep their own name, the overwhelming majority of women end up changing it when they marry, even today.

3. CONCLUSION. Nearly four decades after the U.S. National Organization of Women, at their 1970 convention, asserted the right of women to keep their own surname (Kupper 1990:40), and the 20th-century feminist movement began actively challenging the patriarchal naming of married women as “Mrs. Hisname,” 76% of all women surveyed and fully 81% of women in their 20s continue to adhere to conventional name-changing patterns. A small percent of those who change their name (about 6%) opt for hyphenation, but generally only the woman hyphenates, not her husband, so even hyphenation reinforces the notion that it is up to women to alter their names in marriage relationships. Furthermore, if the data in this survey are accurate for the population at large, there may even be a reversal of the previous slow trend toward increased retention of surnames by married women, as the youngest women now show less inclination to maintain their own surname.

Both women and men offer reasons for their preference for wives to take their husband's surnames, ranging from convenience, to tradition, to concerns over what to name the children. In fact, anxiety about what to name the children and a belief that all family members should share the same surname are frequently cited in my data as well as in the data of every other study I have encountered on women's surname choices. People often argue that a shared family surname promotes family unity, but with few exceptions, there is still an overwhelming assumption that it is the man's name which should represent the family, not the woman's. This reflects a continuing societal assumption that women should

adapt to men's preferences and borrow from their identities, while men should maintain their identity—and their name—unaltered.

The findings of this study warrant further investigation, particularly the observation that younger women may be returning to even more conservative naming practices than women only a decade or two older than themselves. The struggle over women's names mirrors the larger struggle for full functional equality for women and men, and until it becomes as easy and as commonplace for men to assume their spouses' name as for women to do so, appeals to family unity will continue to be little other than a smokescreen for the perpetuation of women's subordination, particularly in heterosexual marital relationships.

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ON THE EMBODIED NATURE OF COMMUNICATION

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WHAT IS THE ROLE AND RELEVANCE OF THE BODY IN COMMUNICATION? There is no single, simple answer to this question, and in contemporary cognitive science there are completely different views of how to consider the issue. In this paper I address the issue from an *embodied cognitive science*¹ perspective. Nevertheless, the most common, as well as still dominant, view of the role of the *body* in communication is as a trivial 'appendage' to the real intellectual mind. Therefore, bodily aspects are frequently addressed in terms of *non-verbal communication*, *nonverbal behavior*, or *body language*.² This can be partly explained by the view of regarding 'mind' as superior and/or independent of the 'body', which subsequently considers bodily social interactions (such as gesture, posture and so on) merely as the visible result and output of mental intentions. Consequently, it is suggested that agents relate to each other in communication much the same way as they relate to other parts of the external world, that is by having more or less explicit internal symbolic representations of each other, which then are manipulated internally (cf., e.g., Quinn, Macrae & Bodenhausen 2003). In other words, the *computer metaphor of mind* is a centralized view of cognition, taking place inside the skull with the body only serving as some kind of input and output device, i.e., a physical interface between an internal program (cognitive processes) and an external world.

Theories of embodied cognition have during the past two decades offered a radical shift in explanations of the human mind, emphasizing the way cognition is shaped by the body and its sensorimotor interaction with the surrounding social and material world. Thus, embodiment has become a much discussed concept (e.g., Gallagher 2005, Gibbs 2006, Lakoff & Johnson 1999, and Varela, Thompson & Rosch 1991), and usually referred to as 'embodied cognitive science', it portrays a much more complex picture of the mind. This means, it stresses the interplay between the environment, the brain and the body's sensorimotor processes, which are pivotal for cognitive activity to take place. Thus, embodiment might offer a non-dualistic explanation without conceiving the mind as a mental sphere correlated with its physical realm. As Lakoff and Johnson characterize it:

...the mind is embodied, not in any trivial sense (e.g., the "wetware" of the brain runs the "software" of the mind), but in the deep sense that our conceptual systems and our capacity for thought are shaped by the nature of our brains, bodies, and

¹ The terms *embodied cognitive science*, *embodied cognition*, *embodiment*, and *embodied action* are here used interchangeably. For a more thorough clarification, see, e.g., Lindblom (2007:9-14).

² It has been estimated that nearly two thirds of the meaning in spontaneous communication is 'received' from so-called non-verbal signs (Burgoon, Buller & Woodall 1996).

bodily interactions. There is neither no mind separated from and independent of the body, nor are there thoughts that have an existence independent of our bodies and brains. (1999:265)

Broadly speaking, *embodiment* refers to the experiences that arise from the living body in its interactions with a material/physical as well as a social and cultural world.

The aim of this paper is twofold. First, it portrays the significance of embodiment in meaning-making activity, by presenting an integrated understanding that supports and explains the relationships that actually exist between embodied actions and cognition³ in communication. Secondly, it aims to further investigate and analyze the role and relevance of interacting socially through embodied action,⁴ offering additional empirical evidence in favor of current theoretical work. Analyzed data, collected from spontaneous meaning-making activity in a real life situation, reveals some unforeseen issues concerning embodied speech-gesture combinations.

1. EMBODIMENT IN MEANING-MAKING ACTIVITY. Recent work in embodied cognitive science and related disciplines indicates that embodiment plays several important roles in meaning-making activity, but there is no unified framework that addresses why and how this is accomplished from an embodied perspective. I would like to address this issue by intertwining findings from different research areas in order to emphasize the significance of embodiment. Due to space limitations, I will show only a few examples that significantly stress the importance of embodiment in meaning-creating activity. (For more details, see Lindblom 2007, especially chapters 4–6).

1.1. SOCIAL PSYCHOLOGY. Empirical evidence from social psychology has demonstrated how social thought and judgments can be affected by bodily states, actions and motivations. Barsalou *et al.* (2003) have identified the following four kinds of social embodiment effects.

Firstly, perceived social stimuli do not only produce cognitive states, but also bodily states. For example, it has been reported that high school students who received good grades in an exam adopted a more erect posture than students who received poor grades. Moreover, subjects primed with concepts commonly associated with elderly people (e.g. 'gray', 'bingo', 'wrinkles') exhibited embodiment effects such as slower movement when leaving the experimental lab, as compared to a control group primed with neutral words.

Secondly, the observation of bodily states in others often results in bodily mimicry in the observer. People often mimic behaviors, and subjects often mimic an experimenter's actual

³ Due to the interdisciplinary nature of this paper, it is worth mentioning that there are some problems with the vocabulary. While the aim is to move beyond the traditional dichotomies of mind/body, cognitive/bodily, verbal/ non-verbal communication, and so on, sometimes these concepts are nevertheless applied because they are accepted and commonly used terms.

⁴ From an embodied cognitive science perspective, an embodied action, e.g., a gesture, is not considered to be a manifestation of an internal cognitive process (as in computationalism) but rather as an element of cognitive activity. Thus, an embodied action is a form of cognition, and not an expression or output of internal cognitive processes.

behavior, e.g., rubbing the nose or shaking a foot. Subjects also tend to mimic observed facial expressions, emotions, and so on, which is widely documented in the literature.

Thirdly, bodily states produce affective states, which mean that embodiment not only facilitates a response to social stimuli but also produces tentative stimuli. For example, subjects rated cartoons differently when holding a pen between their lips than when holding it between their teeth. The latter triggered the same musculature as smiling, which made the subjects rate the cartoons as funnier, whereas holding the pen between the lips activated the same muscles as frowning and consequently had the opposite effect.

Fourthly, compatibility between bodily and cognitive states enhances performance. For instance, several motor performance compatibility effects have been reported, in which subjects responded faster to 'positive' words (e.g., 'love') than 'negative' words (e.g., 'hate') when asked to pull a lever towards them.

These examples, among several other studies showing similar effects, demonstrate the strong relationship between so-called bodily and cognitive states in communication. In short, the bi-directional swapping between these states occurs automatically without any higher knowledge structure, supporting an embodied perspective.

1.2. PHENOMENOLOGICAL ASPECTS AND SOCIAL NEUROSCIENCE. Current findings in social neuroscience provide strong evidence for an embodied interpretation of meaning-making activity. For instance, simulation theories and work on mirror-neurons are good examples of more embodied views of communication (Rizzolatti *et al.* 2002, Gallagher 2005, 2007). In short, the simulation account argues that cognitive processes are achieved by the reactivation of the same neural structures used for physically sensing, moving and acting in the environment, but also in communication and meaning-making activity. Gallagher for instance, stresses that the understanding of the other person is a kind of "embodied practice" (2007:208, 216–30).

Such an understanding may rely on a resonance mechanism, being part of special kinds of visio-motor neurons in the premotor cortex in the macaque monkey brain, namely mirror neurons, which exemplify how perception, action, social cognition, and even speech come together at the level of single neurons. Mirror neurons are located in area F5 in the monkey brain and become activated both when performing specific goal-directed hand (and mouth) movements and when observing or hearing about the same actions (Kohler *et al.* 2002, Rizzolatti *et al.* 2002). Because mirror neurons respond to both conditions, it has been argued that the mirror system functions as a kind of "action representation." Consequently, this mirroring mechanism enables the agent to understand the meaning of the observed action by embodied reactivation. This means, even while only observing the actions of another individual, a neural "triggering" event in fact takes place in the observer. Accordingly, the linking between action and perception offers an 'intuitive' understanding of the observed action, i.e., what it means to do it and what the action really is about.

Consequently, Gallagher argues that phenomenologically, when one sees another person's action or gesture, one directly perceives or immediately 'sees' the meaning in the action/ gesture, without the need to model it at a higher cognitive level. Thus, his major point is that the neural systems "are activated by the other person's action". Thus, "the other

person has an effect on us" (2007:8–9). Hence, this implies that bodily actions might activate as a social resonance mechanism in the process of perceiving others, which may constitute the very foundations of the particular social cognitive phenomena.

Moreover, it has been speculated that the mirror system might be a basic mechanism necessary for imitation and attributing mental states to others (e.g., Rizzolatti & Arbib 1998, Rizzolatti *et al.* 2002). Taken together, the consideration of the mirror neuron system and simulation theories as the neurobiological underpinning of communication, provides significant examples of embodied views of meaning-making activity.

1.3. COMMUNICATION AS GROUNDED IN EMBODIMENT. The traditional, but artificial, divide between verbal vs. non-verbal interaction in linguistics may be bridged from an embodied perspective. Iverson and Thelen (1999), for instance, stressed that the hand and the mouth are tightly coupled in communication. They demonstrate converging empirical evidence which suggests that the systems of hand and mouth movements are not two separate systems. Rather, they should be viewed as an integrated communicative "speech-language-gesture" system, linking action, thought and cognition.

Some researchers have argued that conceptualization and language understanding cannot be achieved through the manipulation of amodal, arbitrary symbols alone but have to be grounded in the body's interaction with the environment (Lakoff & Johnson 1999), and there are empirical results that support a close coupling between language and action (Glenberg & Kaschak 2002, Willems & Hagoort 2007).

Gesturing is a significant aspect of communication, and it constitutes a pan-human ability that provides important information to the listener, since gesture offers speakers the means of expressing thoughts difficult to articulate in speech (Goldin-Meadow 2003, McNeill 1992, 2005). For instance, a so-called gesture-speech mismatch occurs when the speaker's speech and gesture convey different information, and the 'extra' ideas that are found in mismatches are only conveyed in gesture. Gesture-speech matches then occur when the same information is conveyed in both speech and gesture at the same time (Goldin-Meadow 2003). Furthermore, gesturing may be a form of processing initial ideas that are shadowed but not hidden, and gesture and speech complement, but do not compete, with each other (Goldin-Meadow 2003, McNeill 1992, 2005). Accordingly, gesture is a natural part of communication, and enables people to embody their thoughts in action.

Interestingly, the human homolog to area F5 in the monkey brain is Broca's area, which has several crucial functions in language production (Arbib 2005). Rizzolatti and Arbib (1998) suggest that phylogenetically speaking, the human mimetic and communicative capacity is a natural extension of the action-recognition mechanism based on mirror neurons. Also McNeill (2005) emphasizes the 'thought-language-hand' link in communication, originating between area 44 and 45 in Broca's area, highlighting the double characteristic of speech and gesture, i.e., functioning both inwardly as well as outwardly. He stresses that area 44 is mainly responsible for the organization of action sequences, whereas area 45 is the part that contains many mirror neurons, which he suggests became self-responding to one's own actions subsequently imbuing them to contain meaning. During phylogeny, these two systems became co-opted in order to unite manual gesture and vocalization. This means,

speech and gesture evolved *together* to embody meaning. The crucial shift in the function of mirror neurons occurred when they began to respond to significances other than the actions themselves, providing the basis for recognizing the actions of others (McNeill, 2005). Hence, this co-opted system seems to be a part of a circuit for recognizing intentional goal-directed actions from one's own actions or from others, by the fact that gesture signifies things other than the actions themselves. Consequently, meaningfulness emerges from the ability to reactivate a social reaction of another in yourself, a way of reacting to your own actions similarly to the actions of others. That is, communication is relational, given that the meaning is both experienced as well as 'mirrored' in both the person performing the action and in the observer. This is a more complex way of portraying interaction than the more static idea of a 'sender' and a 'receiver' in communication (Fogel 1993).

Thus, from an embodied perspective, the reactivation of the mirror neuron system might function as the glue that binds hand, mouth, action and speech together, but future work is needed to further clarify the relation between these issues in communication

1.4. FOUR FUNDAMENTAL FUNCTIONS OF EMBODIMENT. The work presented above offers highly complementary rather than alternative views on the role of embodiment in communication. By integrating these perspectives, we can obtain a deeper understanding of the issue, without bypassing the effects of embodiment. Based on the previous ideas and empirical findings, I have identified four fundamental functions of embodiment in communication (Lindblom 2007):

- The body functions as a social resonance mechanism.
- The body functions as a means and end in communication and social interaction.
- Bodily actions and gesture function as a helping hand in shaping, expressing and sharing thoughts.
- The body functions as a representational device.

1.4.1. THE BODY FUNCTIONS AS A SOCIAL RESONANCE MECHANISM suggests that there is no need to decode or represent embodied social stimuli to more 'advanced' or cognitive states since the bodily states in themselves actually are cognitive states, as related work portrays. Hence, this first function portrays how cognitive and bodily states of the interacting partners are reflected both in themselves and in between them.

1.4.2. THE BODY FUNCTIONS AS A MEANS AND END IN COMMUNICATION AND SOCIAL INTERACTION. The suggested linkage between 'action' and 'action-perception' provided by the mirror neuron system implies that the body and its sensorimotor processes are 'cognitive' in themselves. The great benefit of this action-understanding linkage, beside its parsimony, is the inbuilt *dual* ability of grasping both the 'what' and 'why' aspects of the present action, i.e., what the action is about as well as catching the intention behind the movement. Hence, this second function stresses how bodily actions operate both outwardly and inwardly in meaning-making activity.

1.4.3. BODILY ACTIONS AND GESTURE FUNCTION AS A HELPING HAND IN SHAPING, EXPRESSING AND SHARING THOUGHTS. Besides speech, manual gesture is a significant (embodied) aspect of meaning-making activity, which may provide important information to the listener, since gesture offers speakers the means of expressing thoughts difficult to articulate in speech. Through gesturing, we are able to generate and embody dynamical associations between different matters, which can offer new insights to the present situation or problem at hand. In addition, gesture sometimes serves as an explicit instance of the action-meaning embodied in speech, suggesting that hand movements are physical externalizations of the speaker's ideas.

1.4.4. THE BODY FUNCTIONS AS A REPRESENTATIONAL DEVICE. In addition to speech, there is the more controversial claim that non-vocal embodied action also has representational properties, where certain kinds of gesture, portraying representational aspects, are the most obvious examples of the body as an external representational device. The neurological roots of this ability might be the activity of the mirror neurons, since their linkage between 'action' and 'action-perception' might propose a kind of 'action representations' that are directly enacted in communication. Furthermore, since mirror neurons seem to 'understand' the goal of the action, it can be argued that the grasping of the action does not require a declarative understanding, since it is meaningful in itself.

2. EMPIRICAL WORK. In order to illustrate the significance of embodied action in meaning-making activity, a naturalistic inquiry was conducted. The case study was carried out during a guided tour at a ranch which maintains and preserves herds of Spanish mustang horses.

2.1. THE CHOSEN APPROACH. The focus of analysis was how we embody our thoughts in action through gesture, speech, posture, and gaze in meaning-making activity, which go far beyond the bounds of internal symbolic mental processes. Hence, the unit of analysis considers both the persons' spoken words and bodily actions, and the social situation at hand, which in many cases actually provides meaning to the embodied actions. The participants were the head of the ranch, Bob, and Katrin, who was the head of a group of visitors. The data collecting technique used was participant observation with video recording, which then was analyzed at micro-level via 'frame-by frame' analysis, from an ethnographic perspective.

Due to space limitations, I only present a short analyzed episode that exemplifies how embodied action matters in meaning-making activity (see Lindblom 2007:203–52 for more details). It should be noted, however, that the four fundamental functions of embodiment are not always explicitly mentioned below, but they serve as the ways to explain and describe how meaning-making activity presumably is embodied.

2.2. ANALYSIS AND RESULTS – 'THEY OWN ME' In the following analyzed sequence⁵, lasting approximately 6 seconds, Bob tells us about his relationship with the horses, and the dialogue proceeds as follows:

⁵ However, the dynamic and situated nature of socially embodied actions result in some problems when representing and illustrating them in "stiffer" mediums such as verbal descriptions and two-

- [1] Bob "everyone says to me – 'how many horses do you own?'"
- [2] Bob "I don't—they own me" (then Katrin says "yeah")
- [3] Katrin "...How many horses own you?" (followed by laughter)
- [4] Bob "yeah... really"

Just before Bob begins his utterance and during the verbalization of the first one, he leans his body slightly forward. While Bob verbally utters "everyone says to me", in a fairly alert and easy-going tone of voice that is also reflected in a delighted facial expression, he also makes a little and quick manual gesture. When he continues the utterance, saying "...how many horses do you own?"—still with the same tone of voice and facial expression—he once again moves his hands. This time, however, the gesture is bigger in scope and more manifested, given that it is molded by both his hands, having its 'peak' during the pronunciation of "horses". The entire gesture unfolds in less than a second, but seems to be a significant part of his speech-gesture match. Hence, the gesture match highlights horses, which can be interpreted as the central issue of the utterance, but the gesture also serves as an indicator of the numbers of horses, providing an 'answer' to how much 'many' actually is. That is, the gesture-speech combination both serves as a mismatch and a match in this case, because the wider gesture with both hands indicates that the number of horses is not very small but quite large.

Before Bob continues, he turns his head and gazes toward Katrin and the others, offering them his focus of attention, without explicitly looking at Katrin. This indicates how the interaction is co-regulated, given that Bob does not take anything for granted and the shift in focus of attention and slightly altered bodily posture are ways of establishing and maintaining the unfolding interaction. Katrin's slightly altered bodily posture toward Bob indicates that she is still an active partner in the meaning-making activity. Bob subsequently utters, in a teasing and ironical tone of voice, "I don't - they own me." During the first part ("I don't") Bob once again makes a similar quick and outward gesture with his hands as previously, but this time it is more loose and ill-defined. This gesture can be interpreted as highlighting that he does not own the horses, but the interesting part unfolds when he says "—they own me". The entire pronunciation takes less than three seconds.

After the gesture performed during the verbalization of "I don't", he makes a short pause before saying "- they own me". Meanwhile, he moves his hands upward and toward his thorax, but without touching it (**Figure 1a**, overleaf). However, when he utters "they", the toward motion ends and takes the opposite direction instead, moving away from his thorax (**Figures 1b–c**). That is, the change of direction of the action occurs exactly during the verbalization of "they", and during the rest of the verbalization, the outwardly action continues (**Figure 1d**). When Bob has finished his utterance, he holds his hands motionless in that particular position for a while (**Figure 1d**) and Katrin then says "yeah". Her agreement is also manifested in her tone of voice, which is positive and rising, but rather quiet. Moreover, she slightly shifts her focus of attention to Bob.

dimensional photographs, which are the media used here. The dynamics of embodied actions are better displayed in the actual video recording, and ideally, it would be preferable if the readers of this paper were able to actually view the video clips being analyzed so they could observe my analysis of the sequences themselves.



Figure 1. The gesture in form of bodily actions toward and from the thorax performed during the verbalization of “—they own me.”

Next, Bob moves his hands again into a more widespread gesture which he maintains for a time (**Figure 2**).

Meanwhile, Katrin paraphrases Bob’s utterance by saying, in a quiet, but rising and joyful tone of voice, “...How many horses own you?” during which she very rapidly changes her focus of attention from Bob, toward the horses, and then looks back at Bob (**Figure 2b–d**). Hence, Bob’s participation in the interaction is indicated by the changes in gesture; bodily posture and facial expression, and Bob’s gesture ends when Katrin utters “own” and he holds his hands along side his upper body when she finishes her question. During her utterance, he also shrugs his shoulders, holding them in the upward position for a moment. Additionally, his facial expression changes, displaying the emerging meaning they create together. His face changes from a stricter, resolute expression into a grin with closed lips. Meanwhile, he lowers his shoulders (**Figure 2d**). When Katrin has finished her utterance, Bob nods in agreement. Then Bob says “yeah... really” in a more ironic and falling tone of voice. As indicated in **Figure 2d**, they both lean toward each other and then laugh, and the laughter occurs just after the end of the verbal expression. This is interpreted as a way of showing their agreement of understanding through embodied, cross-modal meaning-making activity.

Broadly speaking, this episode illustrates how ubiquitously present speech-gesture matches and mismatches are in communication, sometimes serving as deliberate attention devices for certain kinds of information. Thus, gesturing has a significant communicative intention, as well as serving as a way of shaping and expressing Bob’s own thoughts.

Further analysis of Bob’s mismatch reveals earlier unforeseen but significant aspects concerning the embodied nature of meaning-making activity. Bob’s upward gesture towards



Figure 2. The co-regulated bodily actions performed by Bob and Katrin while Katrin utters "...How many horses own you?"

his thorax (Figure 1), is considered an example of the fourth social embodiment effect, i.e., that compability between cognitive and bodily states enhances performance, although Barsalou *et al.* (2003) did not consider gesture and communication. This means the motion towards his chest is easier to make when the issue at hand is something positive than something negative. However, he changes the direction of the gesture very quickly, just before he actually would have touched his chest, and the 'toward gesture' takes the opposite direction, outward. The actual change of direction happens when he utters 'they' which represents the horses. When the sentence is completed, he holds his hands still for a while, and then makes a bigger and more widespread gesture which he 'freezes' during a pro-longed moment while he shrugs his shoulders. These embodied actions are interpreted as ways of representing the bizarreness of the utterance, namely that the horses should own him. In order to highlight the conflicting meaning expressed, he makes a certain kind of mismatch. In other words, Bob makes an intentional mismatch, as opposed to the more unintended mismatches that Goldin-Meadow (2003) describes. It is important to point out that Katrin actually grasps the underlying meaning of the odd utterance, by paraphrasing his verbal expression in a joyful and teasing tone of voice, and the following laughter also serves as a way of manifesting the emerging meaning while she leans towards Bob. Realistically, the horses cannot own him; however, emotionally, his devotion to the horses implies they 'own' his full attention.

3. SUMMARY AND DISCUSSION. This paper has integrated different aspects on the embodied nature of communication, resulting in an embodied framework which explains and

shows how socially embodied actions are crucial parts in ongoing meaning-making activity in situ. This implies that one's own understanding of other agents' minds is more than the exchange of communication signals, and although the current knowledge cannot explain in detail the complexity of human communication, it does shed some light on how the interacting partners are able to share the communicated meaning in the dialogue. I argue that embodiment is the part and parcel of communication and cognition in the most general and specific ways, in which dynamically embodied actions themselves are both cognitive and communicative. Thus, if we cut the 'body' from the 'mind', we will no longer be human cognizers. The body is always communicating to us, so to speak, through its embodied actions. Most generally, the gap between body and mind is fictitious. Instead, one must mind the body in communication and cognition.

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THE CONTINUING CHALLENGE OF PROTO-MIXTECAN

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FIFTY YEARS HAVE ELAPSED SINCE THE PUBLICATION OF *PROTO-MIXTECAN* (Longacre 1957). This work was the first detailed, monograph-length piece of comparative-historical reconstruction in a family of Mesoamerican languages. As such it broke fresh ground in its day. The fifty-year anniversary of this publication was celebrated in Mexico City at a Round Table sponsored by the Institute of Anthropological Investigations of the National Autonomous University of Mexico (UNAM), March 28, 2007. But fifty years is fifty years, and a new generation of scholars is at work and made their presence known at the Round Table. It is hoped that a better grasp of Proto-Mixtecan (PMx), embracing a considerable number of Mixtec (M) languages,¹ one Cuicatec (C) source,² and all three Triqui (T) languages³ will be attained with this fresh and enlarged data base—not to mention the desire of younger scholars to recast older work into newer theoretical frameworks that seem more adequate to them,

A panel (Comparative Linguistics of the Mixtecan Languages with special attention to Triqui), originally intended to involve several participants at the Round Table in Mexico City, was slated at LACUS 2007 as a follow-up to afford all of us a chance to rethink, if necessary, our former presentations or at least to say more clearly what we intended to say. In that the panel was attended by only two of those invited (Longacre and Edmondson) this intent was only partially realized.

¹ While my own work in 1957 referred mainly to the Mixtec of San Miguel Grande (which proved to be a fortunate choice), many more Mixtec languages have been studied with publication of dictionaries and technical articles. Inga McKendry, a graduate student at the University of Edinburgh and a colleague within the SIL, is currently working on the reconstruction of PM (Proto-Mixtec) including cognates from a considerable number of Mixtec languages. At the UNAM Round Table she presented a paper “Los tonos del proto-mixtec” (McKendry 2007).

² For Cuicatec, unfortunately, our data base has not enlarged much beyond what I had available in 1957, but I intend to make the data that I have available to whoever wants it.

³ Triqui studies are going gratifyingly forward. Not only have Bruce and Barbara Hollenbach published extensively on Copala Triqui (TC) but Kosuke Matsukawa (2008) is studying that language, while Cristian DiCanio is going forward vigorously on the study of the Triqui of San Martín Itunyoso (TI), thus (counting my work in Chichauxtla Triqui, TCh) covering all three languages in that complex. The study of TCh has received a recent boost by the instrumental studies of Jerry Edmondson (Longacre, Edmondson & Rojas (2006). The earlier spelling, Trique has been changed to Triqui at the request of speakers of these languages.

Consonants:			Vowels:		
*t	*k	*kw	*i	[*+++++++++i]	
*θ	*x	*xw	*e	*a	[*o] (*ɔ)
*nd	*ng	*ngw			
*n		*m			
*y		*w			
	*l				

Table 1. Reconstructed phonological system of Proto-Mixtecan, as presented in Longacre (1957).

1. PROTO-MIXTECAN, AS RECONSTRUCTED IN LONGACRE 1957 (and in subsequent work by myself and others) was characterized by 14 consonants; 4–6 vowels and complexes of vowels (sequences of vowel + **m*, and/or **-H*); and four tone levels with fifteen of the possible sixteen two-tone combinations (Figure 1).

The vowel in parentheses was eliminated by Longacre soon after publication of Proto-Mixtecan: it proved to be **am*. The vowels in square brackets were eliminated by C. Rensch (1976) as particular sequences of **V* plus **m* and/or **-H*. Rensch's reduction of the vowels is tightly woven into his theory of two laryngeals in PMx. I had reduced the two laryngeals of Proto-Triqui (PT) to one by internal reconstruction of *-h* and *-ʔ* as one phoneme with spirant and stop allophones and then extrapolated this situation to PMx, only to have Rensch subsequently reconstruct a second laryngeal in PMx. If Rensch is correct, possibly I should never have merged *-h* and *-ʔ* in PT and in PMx. I gladly refer this problem to the current work of my colleague Matsukawa (2008)! With the caveat that Rensch' work can not be ignored, I note in passing, however, that having a 'laryngeal problem' in a piece of comparative-historical reconstruction is, as it were, "par for the course."

1.2. TONES. In *Proto-Mixtecan* 1957 I reconstructed four levels with fifteen of the possible sixteen occurring sequences of two tones occurring either in successive syllable or right-shifted to the ultima. This is an ongoing process of right shifting as seen even today in the Triqui of Chichahuaxtla (TCh): *me⁴sa³* (Spanish loan) 'table' but *si³-me³sa⁴³ si³* 'his table'. My reconstruction of four tones in PMx was, again, based on internal reconstruction in TCh, assuming that the latter had a high tone *4 which had a raised allotone *4+ before a lost laryngeal, thus making the allotone contrastive. But DiCanio (2007) now posits for the Triqui of Itunyoso (TI) a five level system with both ⁴*h* and ⁵*h*. So? Should PT be reconstructed with a system of five levels? I gladly refer this problem to DiCanio and Matsukawa!

Nevertheless, assuming the possibility of the reduction of Triqui on some horizon to four tones (by some means or other!), PMx tones and tone combinations on the three lower levels reconstruct well according to the following set of correspondences in M (according to my limited dialect sources), C (where the preferred canonical form is CVVCV) and T:

- (1) *₃₃ > M --; C ---; T (3)₃
 *_{33ʔ} > M --; C --\ (+/-ʔ); T 4h (leveled to 3h in most nouns)
 *₂₂ > M -\; C ---; T (3)₃ (>PT *₃₃)

- *₂₂? > M -M\; C --\(+/-?\); T _{3h}
- *₃₂ > M -\; C ---; T ₃₂
- *₂₃ > M \-; C ---; T ₃₂
- *₂₁ > M --; C -\; T ₂₁ leveled to ₃₂ in almost all contexts (PT *₃₂)
- *₁₂ > M --; C -\; T ₃₁ (PT *₄₂, if PT were five level otherwise *₃₁)
- *₃₁ > M -\; C ---; T ₃₁ (PT *₄₂, if PT were five level, otherwise *₃₁)
- *₁₃ > M \-; C ---; T ₃₁ (PT *₄₂, PT were five level, otherwise *₃₁)

Besides the correspondences noted above there are seven more which need to be posited to account for sporadic occurrence of high tone in any of the three languages. These I considered in 1957 to be witnesses to tone sandhi variants, *viz.*, *₃₄, *₄₄, *₄₁, *₄₃, *₂₄, *₃₄, and *₄₂.

The important developments since 1957 are: (1) DiCanio's (2007) analysis of TI as a five-level system, and (2) McKendry's ongoing analysis of Proto-Mixtec (PM) in which she is eliminating tone sandhi altogether in favor of a system of fused elements in which the consonants and vowels of the fused morphemes are lost and only the tones remain actualized on the preceding vowel (see McKendry 2007). The former development makes it possible that PT was itself a five-level tone system and leaves unsolved the problem of how PT's five tones developed from the PMx four-level system. The second development amounts to a reinterpretation of my putative sandhi variants, but does not affect the positing of these entities as such.

2. SCATTERED WITNESSES TO PMX GRAMMAR. Besides the correspondences posited in Section 1 of this paper, there remain to be accounted for what appear to be scattered witnesses to the grammar of PMx. While the consonants and vowels of PMx ultimas reconstruct well, the consonants and vowels of the penultimas do not reconstruct regularly but bear possible witness to consonant and vowel gradations that were parts of the grammar of the PMx nouns and verbs. I discuss below in the first subsection witnesses to the verb paradigm—where we are on relatively solid ground because Cuicatec preserves the verb paradigm to this day. Then I present evidence for a noun paradigm based on Triqui with more remote evidence from a nearby language family, Amuzgo.

2.1. PMX WITNESSES TO THE PMX VERB PARADIGM, WHICH I WILL TERM 'PARADIGM A.' The discussion of verbs in PMx is rather large and complex in *Proto-Mixtecan* (Longacre 1957:56–61). In these five pages, various sets of cognates are cited to illustrate the complexities of the developments from the PMx verb system to verb systems in the three present-day languages. Due to limitations of space I can not reproduce all this material here. I will have to be content with a summary. Necessarily, then, I am reduced to making "pronouncements" here without support from evidence of the sort gained by painstakingly citing various cognate sets at various stages of the argument. I refer the hearer/reader to *Proto-Mixtecan*—a volume long out of print, but fortunately available in the dusty stacks of libraries around the world by virtue of having been published as a supplement to the *International Journal of American Linguistics* (IJAL 23(4), part III, October 1957).

The following consonantal variations characterized the verbs in PMx: k^w -, $*x$ / $xi/w/y$ -, $*k$ -, $*d/n$ -. These alternations indicated four aspects/tenses of PMX which were respectively: (1) potential/future. (2) continuative/present; (3)completive/past; and (4) resultant state/anterior past.

In C, more than in the other two languages, the four original aspects are best preserved and distinguished as a living paradigm. But many times, even in C, the $*k^w$ and the $*k$ are merged, with result that one or the other survives as the potential form in that language. The completive/past marked with k survives in some verbs but in others the common development of $*k^w$ and $*k$ has resulted in the development of other markers for the completive/past, e.g., marking with a tone change. As far as the third aspect, with four allomorphs in PMx, C has preserved reflexes of the $*xi$ and $*y$ allomorphs, which have palatalizing influence, resulting in the past tense marker becoming ki or $ċi$ and even spreading palatalizing influence throughout the verb paradigm.

In M the distinction between the $*k^w$ and $*k$ aspects is completely blotted out. A reflex of one or the other form marks the potential at the present day, and a new marker, the prefix ni - marks the completive/past. The continuative/present was marked in earlier M by a prefix (cf. Hollenbach 1984) which occasioned a tone change in the following stem, but the segmental phonemes have been lost and today only the tone change remains to mark this aspect. The reflexes of the fourth PMx aspect occur on forms which are no longer a live part of the verb paradigm but appear on adjectival forms.

In contrast with the other two languages, T has followed its own path of development. This is the result of the fact that phonological developments have blotted out in T the original PMx aspect system that suffered more or less complete ruin. The following PMx penultimate syllables have fallen together: $*ka(m)$, $xa(m)$, and $k^wa(m)$, all of which became ga in T. The result was the obliteration of the distinction between the PMx continuative and the completive. But T does bear witness to the PMx $*w$ allomorph (continuative/present) in a few verbs: e.g., $wan^3?an^{34}h$ 'going' versus $gan^3?an^{34}h$ 'went'.

On the ruins of the old aspect system, but using bits and pieces of it, T elaborated its own system for marking the old distinctions. (1) A new morpheme $g(v)$ - came to mark the completive aspect while the absence of this morpheme made the verb stem inherently continuative—so that most verbs are now vowel-initial: e.g., $a^3ċin^{45} si^3$ 'he is asking' vs. $ga^3ċin^{45} si^3$ 'he asked'. We may well suppose that an initial model for this development came about from the loss of the old PMx allomorph $*y$ - 'continuative' in T as part of a general phonological development that eliminated y - in many penultimate syllables, thus leaving forms without any initial consonant to mark the old continuative aspect. (2) In a development the course of which remains obscure, T created a new way to mark the potential, viz., by lowering the tones of the completive form, e.g., $ga^1ċin^1h si^3$ 'he will ask' (the final h is not a marker of the potential as such but is purely a phonological development in which 45 goes to 1h). (3) As noted for M above, reflexes of the old PMx fourth aspect $*d/n$ - became adjectival forms or emerged as stems of verb forms which are not paradigmatically related to each other.

2.2. THE STRUCTURE OF NOUNS IN PMX, WHICH I WILL TERM ‘PARADIGM B.’ This paradigm has two variants which I have named ‘the *t* declension’ and ‘the *θ* declension’. In citing substantiating sets here and below I simply reproduce photographically certain sets from *Proto-Mixtecan* 1957 with the sole modification that the tone levels in T and in PMx that were originally numbered in reverse order—from top to bottom rather than from bottom to top—have been standardized in this paper.⁴ Although retroflexed *ɛ* is not indicated in the sets, retroflexion is indicated where it occurs in the discussion that surrounds each set.

2.2.1. DECLENSION *t* consists in the variation between **t*-, **y*-, and **d*-.

#107 This set of cognates has an M witness to **y*- while C and T witness to **t*- (PMx plate 1).

107. (*31; C, T *34) M-SM, SE *yātà*, M-J *čate*, back; C *táátá* tile; T *ži³ža⁴⁻⁵* back of, roof of, *ž.* (we[?]e³) roof of house; *ži³ža²⁻¹* (ni²tu²⁻³) hunch-backed (tones 2-1 of latter form are obscure); A *kantya* [?] back. The C meaning may be by metonymy from such a phrase as ‘roof of house.’ Plte syll: M **ya*, **xa*; C **ta*; T {**ta*}.

#110 In this set M witnesses to **y*- and **t*-, C witnesses to **y*- and **nd*-, and T to **t*- (PMx plate 2).

110. (*33; C, T *34) M-SM *yūnū* tree, M-SE *yūNū* tree, M-J *yutū* tree trunk, M-M *tutu* firewood; C *nā[?]q[?]q[?]* firewood, *yā[?]q[?]q[?]* stick; T *ži³žy⁴⁻⁵/žy³* stick, wood, firewood, tree; A *ts[?]am* (sg), *n[?]am* (pl) stick, wood. Ult syll: M **n*-, **tn*-; C **n*-, **y*-; T **t*-. Plte syll: M **y*ɔ, **t*ɔ; T {**t*ɔ}.

#135 This set witnesses to **y*- in C and to **t*- in T (PMx plate 3).

135. (*21; C *41) M-SM *tī-sāà*, M-SE *sāā*, M-J *saa*; C *yáááá*; T *ža³taha²⁻³*; A *kasa* (sg), *kantsa* (pl) bird. Plte syll: M adds *tī* in M-SM; C **ya*; T **ta*.

#77 offers us a proliferation of cognates which probably derive from two nouns, one of the ‘*t*’ declension and the other of the ‘*θ*’ declension. M and C witness to **y*-, while C also witnesses to both **t*- and **θ*-, and T witnesses to **θ*-.

#77 (PMx plate 4)

77. (*33, *12; C, T *34, C, T *42) M-SM, SE *yūkū*, M-M *yuku* mountain; C *hī[?]kū* hill, *nā-hāākō* slope, hillside, *ʔdāákó* a pile, *tí[?]kó* a little hill, *ʔtí[?]kū* top, summit; T *kth[?]3* mountain, *da³kā³* slope, hillside, *da³kq⁴⁻⁵* a hill of corn, the nose, *da⁴kuhu¹⁻²* sty (of the eye). *da³kuhu²⁻³* ascent. The latter two T

⁴ For this painstaking piece of work—making modifications in scanned text—I am indebted to my colleague Jim Clarke.

- (#77) forms may be borrowings from M. Plte syll: M *yu; C *yu, *xa, *θa, *tu; T *θa. There is here a mixture of forms from two PMx nouns: One noun with plte *yu, *tu ('t' declension), and another noun with plte *θa, *xa. ('θ' declension).

2.2.2 THE O DECLENSION consists of variation between *θ-, *y-, and *nd-. (In Proto-Mixtecán (1957:35) a further variant *ñ is suggested, but actually this came from an intersyllabic combination *my>ny).

- #264 This set has a witness to *y- in M, a C witness to *d-, and a witness to *θ- in T. (The vowel of the penultimates should be corrected to *am.) (PMx plate 5)

264. (*21, *23/*13; M *24/*14) M-SM yūčī, ti-yūčī some-thing powdered, fīfī sand, M-SE yūčī powder, something powdered, fīfī sand, M-J yuti powder, sand, powdered, M-M yuti sand; C (yāʔʔ) ndūūtʔ sand; T ču³-2-3 powder, da³čū²-1 (čū³) sawdust (second constituent means wood), (yo³ʔo⁴-5)čū² sand. Plte syll: M *yɔ, *fɔ; C *ⁿdɔ; T *θɔ.

- #76 In this set, M and C witness to *y- and T witnesses to *θ-. (The vowel should be corrected to *am.) (PMx plate 6)

76. (*33ʔ/*33; C, T *34) M-SM, SE yīkī, M-M ʔiki squash; C yūūkū squash in the phrases y. (yūūnʔ) calabacita tierna and y. (ndūūkū) calabacita chompa, yūūkū (yāʔʔ) calabacita chiquita, yūūkūʔ calabacita yūūkū (háʔáf) chilacayota; T da³kā⁴-5/kā³ squash; A tske (sg), lke (pl) squash. Ult syll: *kīm/*kʷi. Plte syll: M, C *yɔ; T *θɔ.

- #238 In this set, M witnesses to *θ-, C to *d-, and T to *y-. (PMx plate 7)

238. (*32) M-SM, SE, J ʔōkò, šīkō twenty (latter only in higher numerical sequences of the vigesimal system); C ndīlkū, hāākū twenty (latter only in higher numerical sequences); T-Ch ko², T-Co iko twenty. (T-Co levels all penultimate vowels to i in the numerals 'seven', 'eight', 'ten', and 'twenty', but T-Ch drops these vowels); A ntkyu twenty. Plte syll: M *θi; C *ⁿdi; T *yi. M ʔōkò may be a late reduplication; C haa- is of obscure origin.

- #66 In this set M and C witness to *y-, and T witnesses to *y- alternating with *θ- in the possessed form. (PMx plate 8)

66. (*21) M-SM yāū, M-SE yāū, yāvū, M-J yavi; C hīlvà; T-Ch du³we³-2/w·e³-2-3, T-Co yuwi, T-l yuwe century-plant; A tsua (sg), lua (pl) cactus. Plte syll: M, C *ya; T *θa, *ya.

- #68 This set is similar to #66 (and #67, which is not cited here) with a M and C witness to *y- and with *y- alternating to *ʎ- in T. (PMx plate 9)

68. (*31; T *34) M-SM, SE yūù, M-M yuvii; C hīivā; T-Ch du³we⁴⁻⁵/w• e⁵⁻⁴ straw mat, T-Co yuwi; A tsue (sg), lue (pl). Plte syll: M, C *yu; T *θu, *yu.

- #39. In this set there is no M cognate but it is of interest that C witnesses to *^md- and T witnesses to *y-. (PMx plate 10)

39. (*33; C *34) C ndúúʔvé eruption of the skin, pimple; T ya³?wi³ boil, carbuncle. Plte syll: C *^mdɔ; T *yɔ.

Before leaving these concerns which are related to the two noun ‘declensions’, it is necessary to discuss somewhat more the reflexes in T. What I say here refers to TCh. We wait to see if data from the other two T languages can fill in lacunae and reinforce or modify the scheme here presented. For this and many other reasons I appreciate the current work going forward by younger colleagues in relation to TI and T of Copala (TC)—although Barbara and Bruce Hollenbach have been researching and publishing on the latter for some years now (Hollenbach 1977, 1984).

In the TCh forms there are certain limits on the phonological distribution of the phoneme *y*. In words of CVCV structure, *y* does not occur in the position of the first consonant except in words in which the second consonant is ? or somewhat rarely, ?+semivowel (see set #39 above). For this reason we look in vain for cognates in TCh which witness to PMx **y* in the first consonantal position in CVCV words. On the other hand, there are many CVCV words that start with *d*- which in turn witnesses to PMx *θ (or, in some cases, with derivation from PMx *^md).

Add to this is the fact that in present-day TCh there is an alternation between *y* and *d* which serves to distinguish non-possessed nouns from possessed nouns. For example *yan*³²³ ‘salt’ and *dan*³² *si*³ ‘his salt’; *yan*⁴ ‘tenate’ but *dan*⁴ *si*³ ‘his tenate’; *ya*³?*a*³*h* ‘chile-pepper’ but *da*³?*a*³*h* *si*³*h* ‘his chile-pepper’.

It is helpful at this point to take account of some further features concerning the category of possession in TCh. Names for parts of the body and kinship terms are obligatorily possessed. Many of these nouns begin with *d*, for example, *da*³*ko*⁴⁵ *si*³ ‘his foot’, *da*³?*man*²¹ *si*³ ‘his leg’, *da*³*ne*³ *si*³ ‘his elbow’, *du*³?*wi*³ *si*³ ‘his aunt’, *da*³?*ni*⁴⁵ ‘his child’, *di*³*ni*⁴⁵ *si*³ ‘his brother’, *da*³?*ni*²¹ *si*³ ‘his uncle’. In these words it is probably legitimate—aside from possible analogical spread in T itself—to recognize reflexes of word-initial *θ- in these possessed forms. Nouns that are names of animals function somewhat differently. While in T names of animals frequently begin with *ʃu*/*ʃ*- ‘animal’ (from fusion of *ʃu*³*ku*³ ‘animal’), to indicate possession it is necessary to use a complex phrase consisting of *dan*⁴ ‘possessed animal’+ name of animal, for example *dan*⁴ *si*³ *cua*⁴*yu*³ ‘his animal, i.e., ‘a horse’ and *dan*⁴ *si*³ *ʃi*³*lu*³ ‘his cat’. One can recognize in the form *dan*⁴ ‘possessed animal’ a reflex of PMx **t* in word-initial position, and set about to find a cognate meaning ‘animal’ in M or C with word-initial *y* as reflex of

PMx *y, but no such cognate has turned up as yet. In set #209 a somewhat different etymology is, however, suggested. According to this set, T *dan*⁴ ‘possessed animal’ harks back to a PMX paradigm where *t- alternated with *y as posited above.

#209 (MPx plate 11)

209. (*22?; C *44) M-SM, J, M ?isù, M-SE ?isù deer; C ?yúúddù? horse; T žu³ta³h deer; A kaso (sg), katso (pl) mule, k. hndai deer. (T classificatory noun dā⁴ animal of may be from this root also; if so, the passage to d may be the sort of weakening in syllables with lessened stress that has been illustrated for *k to g in T). Plte syll: M, C *yu; T *tu.

All this leads into the consideration of a bit of collaborating evidence, i.e., the marking of singular vs. plural in Amuzgo nouns. A few years following the publication of *Proto-Mixtecan* an archaeologist colleague, Rene Millon, and I published a joint paper, “Proto-Mixtecan and Proto-Amuzgo-Mixtecan vocabularies: A preliminary cultural Analysis” (Longacre & Millon 1961). I have remained firm in my belief that Amuzgo (A) does not belong to the Mixtecan language family. Nevertheless, Millon and I found it convenient at the time to posit a loose broader grouping, Amuzgo-Mixtecan. Taking account of Rensch’s (1976) grouping within Otomanguean, we might say today that Amuzgo and Mixtecan, as neighboring families within Otomanguean, share certain isoglosses. Could it be that A singular-plural formations are historically related to possessed-unpossessed forms in T?

Thus, A has singular vs. plural forms for ‘chile-pepper’: *tsʔa*, *lʔa* and TCh has *da³?a³h* (poss) and *ya³?a³h* (unposs). Possible sound correspondences here are A *ts* ~ T *d*, and A *l* ~ T *y*. Amuzgo terms for ‘maguey’ (*tsua*, *lua*) and T (poss) *du³we³²* and *wwe³²³* may reflect the same sound correspondence, as does also the set for ‘petate’: A *tsue*, *lue* and T *du³we⁴⁵* and *wwe⁵⁴*. Other A sg/pl and TCh poss/unposs are not as obviously related. Nevertheless, the possibility remains that on some **horizon (Proto-Otomanguean?), there was a morphological distinction whose semantic import was ‘foregrounded/definite’ versus ‘backgrounded/indefinite’. Or, alternatively, this may be a shared innovation in Amuzgo-Mixtecan.⁵ Discourse thematicity may have been basic. The first category became the A singular and the T possessed form; the second became the A plural and the T unpossessed.

3. CONCLUSION. The purpose of this paper has been to give a brief resume of my PMx reconstruction, now half a century old. It has not been offered in the spirit of one defending his turf, but in an effort to present what I believe to be the continuing strength of the work while letting the weak points be evident. As a new generation of scholars rework the old turf, I want to summarize here some of the stones and boulders that I believe continue to litter the field.

1. Within the consonants, perhaps my complex entities, the prenasalized and prenasalized-labialized stops, could be challenged on the grounds that they were simply clusters. The problem appears to be, however, that PMx does not seem to be

characterized by clusters. T, especially, bears witness to some of the rarer complex units in isolated items such as place names, e.g., *nne*³² *ra*³ *ngwi*³ ‘agua del sol’. At any rate, this is a problem in phonological interpretation such as we encounter in some contemporary languages.

2. Retroflexion in T can almost present in itself a problem to the comparativist. Thus, PMx *t>TCh ġ [retroflexed] but *k>TCh č [unretroflexed] in most environments, while TCh r is unaccounted for. Actually TCh has very few instances of r that are not suspect of being fused elements from such elements as ġ*un*- ‘wooden’ or ġ*uh*- ‘fruit, roundshaped’ (cf. Proto-Mixtecan 1957:68–70). But ru3h ‘pot’ and ra3?a3 ‘hand’ do occur. If good cognates in M and C be found for such Triqui forms as these, and plausible sets of sound correspondences posited, it would be easier to adopt such suggestions as Matsukawa’s (2005) that perhaps PMx *ty should be posited as source of T r.
3. Within the vowels, the number of entitites posited is, according to Rensch (1976), interwoven with a layngeal problem: should one or two laryngeals be posited in PMx?
4. While the only portion of my PMx reconstructions that came unscathed through Rensch’s subsequent overhaul in reconstructing Proto-Omanguean is my tone reconstruction, current work may indicate the need for further work in this area, as well. Will PT prove to be a five-level tone system? Then, how are we to explain this development in T? At the most four levels seem sufficient for PMx, and three levels apparently are sufficient for PM. Somehow I hazard the guess that, again, the influence of laryngeals is at work here—granting the importance of laryngeals on the synchronic scene (witness Longacre, Edmondson, & Rojas 2006). Some high imaginative theorizing is in all probability called for here. Still another future source of comparative insight is Inga McKendry’s (2007) reconstruction of PM tone based on a wide dialect base. It would ideally be strategic to let the reconstruction of PMx tones await the completion of McKendry’s work, but this may not be possible.
5. I do not believe that the attempts that I have made to reconstruct some rude outlines of the grammar of the verb and noun in PMx should be brushed off as pursuing chimera. Maybe when adequate A data are available an attempt should be made to scale the mountain from that side.
6. Whatever PMx looks like in the future, it must afford fruitful connections with full dialectology in M and T—and maybe someday with more C data. Ideally historical reconstruction should present us with a plausible skeleton of a real language. And it must relate not only forward to its daughter languages but backward and outward to its Otomanguean connections, as well.
7. Another goal of PMx reconstruction should be the eventual development of a Proto-Mixtecan etymological dictionary—a reference work of a continuing and growing nature in which M, C, and T forms can be traced back to their origins. Maybe early in the next half a century of Mixtecan studies this dream can

be realized—perhaps as a joint venture between the Institute of Anthropological Investigations (UNAM) in Mexico and some entity in the United States.

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LANGUAGE SHIFT ON JAVA

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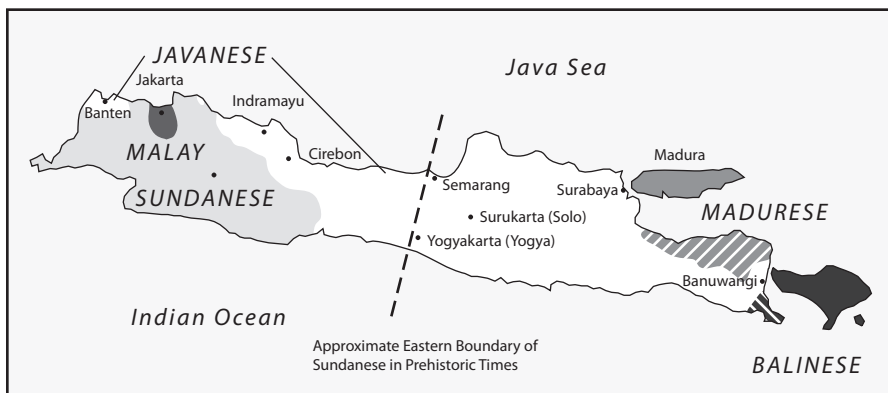
LANGUAGE ENDANGERMENT has been a focus of linguistic concern since the publication of Robins and Uhlenbeck (1991) and Hale *et al.* (1992). Linguistic attention has necessarily focused on the disappearance of small languages with its attendant loss for both the speakers themselves as well as for our database in linguistics. However, as this paper highlights, there is another kind of language endangerment, functional attrition, which can affect even very large languages. Indeed, what makes the situation to be discussed here unique is, firstly, the fact that it affects even the very largest language in its region, Javanese, and, secondly, that the "attacking" language, Malay, was until recently much smaller than the languages it is now displacing.

The paper surveys recent developments in the two principal indigenous languages on the island of Java, Javanese and Sundanese, and outlines the conditions which have led to their ongoing reduction to community languages. The driving force behind the new dominance of Malay turns out to be the sustained support of the state, which has developed and promoted Malay, in the form of the national language *Bahasa Indonesia*, over other all languages.

1. FUNCTIONAL ATTRITION. Functional attrition (FA) can be defined as a cumulative narrowing of the range of functional domains in which a language is used. This process may involve abandoning a language as a literary language, followed potentially by its disuse as a written language in general; it may involve abandoning a language for certain registers or topics of discussion. In its extreme, functional attrition results in the reduction of a language to an informal community language. At this stage, it may no longer reflect the world view of its speakers (Wurm 1991:7).

Instances of functional attrition have been noted in passing since the beginning of research into language endangerment. For instance, in the groundbreaking Robins and Uhlenbeck volume, Adelaar (1991:50) notes that Quechua, with its more than eight million speakers, is being displaced by Spanish in many areas of life, while Brenzinger (1991:19) and Mahapatra (1991:185) report similar observations regarding languages in Africa and India, respectively.

2. THE LANGUAGES OF JAVA. With a land area of just under 2,300 square miles, the island of Java is home to almost 60 percent of the population of Indonesia. The 1990 census (Biro Pusat Statistik 1992) puts the population of Java at almost 120 million out of a total 195.6 million, whereas the much larger island of Sumatra has only 41.4 million and Kalimantan, the Indonesian part of Borneo, has 10.4 million inhabitants.



Map 1. The languages of Java. Based on a map found at <http://en.wikipedia.org/wiki/Java>.

There are two major indigenous languages on Java, Javanese and Sundanese. Sundanese is presently spoken in most of West Java, with the exception of the Northern coastal strip; its estimated 27 million speakers in 1990 (Gordon 2005) account for 80 percent of the population of the traditional province of West Java (Ayatrohaedi 1985). Javanese holds sway in most of the remainder of Java, as shown in **Map 1**. With an estimated 75.2 million native speakers in 1989 (Gordon 2005), Javanese is one of the twenty largest languages in the world, as well as the language with the largest number of native speakers in Indonesia.

Although not originally indigenous to Java, Malay gained a toehold on the island when the Dutch colonial rulers, represented first by the Dutch East Indies Company (VOC) and later by the Dutch state itself, transformed the small coastal town of Jayakarta into its capital city of Batavia in the 16th century. Since the new capital was settled by migrants from throughout “the Indies” and elsewhere, Malay, which had long served as a lingua franca throughout the archipelago, became its principal language. Native speakers of Malay in today’s Jakarta include 2.7 million speakers of Jakarta Malay (Gordon 2005), but many Jakartans of course use other languages in the home. Still, the city has always hosted a sizable number of Sundanese speakers from the surrounding countryside, and Moriyama (1994) has claimed that the city was bilingual in Malay and Sundanese in the 19th century.

It is worth emphasizing that Malay as a whole has always had far fewer native speakers than Javanese. The Ethnologue puts the number of Malay/Indonesian speakers at 22.8 million with an additional 7.2 million in Malaysia (Gordon 2005). Spoken natively around the coasts of Borneo and along the eastern shores of Sumatra, the Malay language spread to what has come to be known as the Malay Peninsula and, later and in creolized varieties, to other parts of the archipelago, principally to Ambon. Malay was rechristened *Bahasa Indonesia* ‘the Indonesian language’ and declared the national language of the future Indonesian state in 1928 largely because of its established status as an interethnic lingua franca, its entrenched use in the capital city (and thus among the intellectuals who made the declaration), and fear of Javanese domination.

Malay was thus only marginally present on the island. Though established as the inter-ethnic lingua franca, here on Java it faced the very large, ethnically and linguistically quite homogenous (Van den Berge 1993:24) populations of the Javanese and the Sundanese. At independence in 1945, there was therefore little reason to suspect that Malay was soon going to start ousting the latter languages. This is especially so in view of Wurm's (1991:14) assertion that lingua francas rarely replace local languages.

3. THE STATUS OF JAVANESE AND SUNDANESE BEFORE INDEPENDENCE. A century ago, both the Javanese and the Sundanese people were large, ethno-linguistically homogenous communities. Both groups found a strong sense of social, political, and even religious identity in their respective languages. Javanese pride pointed towards the greatness of the Majapahit empire of the 13th to 15th centuries and the subsequent Mataram empire from the 16th to the 18th centuries, whose stratified societies gave rise to the famed speech levels of the Javanese language. The Sundanese express similar historic pride towards the Pajajaran kingdom, which found its zenith in the 16th century (Cribb 2000).

Javanese and Sundanese people are also proud of the long tradition of writing and literature in their languages. The earliest extant writing in Javanese is a stone inscription dating from the 9th century while similar Sundanese inscriptions date from the 13th to 14th centuries. Javanese *kakawin* poetry has a continuous history going back to the 9th century (Zoetmulder 1974) with the Sundanese *pantun* poetry again trailing by several centuries. Starting in the 19th century, novels began to be published in both languages and, in the early 20th century, newspapers made their appearance. The colonial government ran its own publishing house which attempted to co-opt local writers for its own propaganda purposes (Moriyama 1994), but it was increasingly rivaled by a fledgling publishing industry which, for instance, managed to bring out at least one new Sundanese magazine each year in the period from 1912 to the beginning of the Japanese occupation in 1942 (Van den Berge 1993:7). While many of these titles may have foundered due to low purchasing power and literacy rates, they still constitute a remarkable record when compared to the lamentable state of publishing in these languages today.

By the late 19th century, publishing in regional languages such as Javanese or Sundanese increasingly became a symbol of a new, ethnic nationalism. Especially in the final decades of the colonial regime, such feelings of regional identity were abetted by the Dutch colonial government in an attempt to counter the now emerging, and presumably more dangerous, pan-Indonesian nationalism. This is particularly so for the Sundanese-speaking west Java. Indeed, in the twilight years between 1945 and 1949 which led to Indonesia's independence as a unitary nation, a Dutch sponsored Pasundan state was established in West Java. Later movements for West Javan independence were suppressed by the central Indonesian government.

Both languages developed standard varieties during the early 20th century based on the prestige of their old court centers, i.e., the Priangan dialect of the highlands around Bandung for Sundanese and the Central Javanese of Surakarta for Javanese. Again standardization of the regional languages was helped along by the Dutch colonial government through

its publishing house and the language congresses it sponsored in an attempt to divide and rule its subject peoples.

The overall status of Javanese and Sundanese in the late colonial period was thus one in which the languages served a full range of communicative functions of ethnically and linguistically homogenous communities. Both had recognized standard varieties, and both were seen as symbols of ethnic identity by their speakers. Malay appeared only on the margins as the language to be used with outsiders from other communities.

4. THE CHANGING LINGUISTIC ECOLOGY SINCE INDEPENDENCE. With the coming of independence after World War II, the linguistic ecology of Java underwent a dramatic change, primarily due to the sudden elevation of Malay as the new national language, *Bahasa Indonesia*. Already during the Japanese occupation from 1942 to 1945, Malay had been used as the only feasible language of administration. Now, Bahasa Indonesia had the full support of the newly independent state.

Indonesia's national (i.e., Malay) language policy has been unequivocally successful on its own terms. Today, most Indonesians are at least bilingual in Bahasa Indonesia, and most are literate in it. In the 1990 census (Biro Pusat Statistik 1992), more than 90% of urban Indonesians over the age of 5 indicated that they speak Indonesian (95.2% of males and 91.2% of females). The same figures for rural areas are 83% of males over 5 and 73.3% of females over 5 years of age. By the beginning of the 21st century, the literacy rate had climbed to 90.9% of all Indonesians (Statistics Indonesia 2005).

By contrast, the attitude of the Indonesian state towards most other languages within its borders has been one of benign neglect despite a requirement in Indonesia's constitution, which compels the government to "respect and maintain" regional languages (Sneddon 2003:207). The same cannot be said of the state's policy towards Chinese, which was long suppressed, especially under the "New Order" regime of General Suharto from 1965 to 1998. Even the importation of written materials in Chinese was prohibited.

After independence, an Indonesian only policy was adopted in education and the use of regional languages as a medium of instruction was banned (Dixon 1991:242). More recently, many Javanese and Sundanese people have again been able to attain a rudimentary literacy in their own languages since the first three grades of primary school may now use these languages as the means of instruction in monolingual areas. However, there is little available to read in any language other than Indonesian since the media operate almost exclusively in the national language. Remarkably for a language with 75 million speakers, there is now not a single Javanese-language daily newspaper, only a few low-circulation magazines, and only a trickle of book publications. A recent catalogue for the state-run Balai Pustaka (Balai Pustaka 1991) publishing house lists only 13 books in Sundanese, consisting of 11 literary works, one dictionary, and one picture book. As of 2006, five Sundanese-language periodicals still appeared, the weekly magazine *Manglé*, the weekly tabloids *Galura* and *Kujang*, the monthly *Cupumanik*, and the bi-monthly *Sunda Midang*. A recurring theme of press reports, for instance in the February 6, 2006 issue of the Bandung, West Java-based daily *Pikiran Rakyat*, laments (in Indonesian) their struggle to stay in business. Even at this low level, though, there are more publications of any kind in Sundanese than in any other

Indonesian regional language (Benjamin Zimmer, personal communication). These compete with dozens of Indonesian-language periodicals of all kinds as well as with a plethora of television stations, all of which broadcast in the national language.

Through its association with development and modernity, Bahasa Indonesia is now felt to be the only appropriate language to use in “modern” settings such as hospitals, shopping malls, the movies, toll booths, etc. (Oetomo 1990). Oetomo (1990) conducted a very interesting experiment in this regard. He placed an older Javanese man wearing traditional Javanese clothes inside a toll booth on a highway in East Java. Such a person would traditionally have commanded a position of the highest respect and, as such, would have to be addressed in *kromo*, the high speech level of Javanese. What Oetomo found instead was that motorists would invariably address the man in Indonesian and would persist in doing so even when the man responded to them in the high Javanese *kromo* speech level. Oetomo concluded that the modern setting of the toll booth apparently was felt to override any traditional conventions of politeness. Accordingly, the usefulness of the high speech level of Javanese is becoming more and more restricted, as Errington (1998:43-44) has noted.

As economic development pushes people more and more into “modern” lifestyles and traditional settings fade from relevance, the respective languages appropriate for these different settings also become proportionally more or less relevant, leading to a recession of the regional languages and an increasing dominance of the national language. Tanner (1967) observed as early as forty years ago, that young, “upwardly mobile” people and parents who wanted “a better life” for their children were switching to Indonesian.

Urban areas in Java not only house an ever-increasing proportion of the population but are becoming ethnically and linguistically mixed, as migrants from throughout Indonesia move to these relatively more developed areas in search for a better life. As a result of families shifting to Indonesian through intermarriage and otherwise, the number of monolingual urbanites is increasing and the national language is becoming the language of everyday interaction in the cities (Sneddon 2003:201-2).

These changes in the linguistic ecology of Java are now starting to be reflected in the number and proportion of people who speak a regional language. A comparison of first language speakers in the censuses of 1980 and 1990 conducted by Steinhauer (1994:761 and *passim*) shows a decline in the percentage of Javanese speakers from 41.3% to 38.8%. While Steinhauer found similar decreases for other regional languages, Sundanese held steady over this period, moving from 15.1% in 1980 to 15.6% in 1990. Among 5-24 year olds, there was a decrease in the use of Javanese as a daily language of 16.3% (from 15.4 million to 12.9 million) and of Sundanese of 12.8% (from 6.0 million to 5.2 million (Steinhauer 1994:768). Finally, despite population growth of almost 2% per year, even the absolute number of Javanese speakers declined in the youngest age groups, with the most significant decline in 5-9 year old rural speakers, who went from 6.9 million in 1980 to 6.2 million in 1990. The number of Sundanese speakers in this category moved only from 2.73 million to 2.76 million despite the much higher numerical growth of this cohort in the intervening years.

5. CONCLUSION. In conclusion, the changing linguistic ecology resulting from the (successful) implementation of Malay/Indonesian as the national language and the association

of this language with modernity has led to continuing functional attrition of the regional languages, including even the largest language, Javanese. The primary elements of this ecological shift are first, the special status as the sole national language assigned to an introduced language, Malay; secondly, increased social and spatial mobility as people move to the cities and aspire to climb the social ladder; and thirdly, the development from monolingual to bilingual communities through inward migration and language shift.

This newly dominant introduced language has now assumed all the critical prestige factors enumerated by Brenzinger *et al.* (1991:38) which typically shape the attitudes of a speech community towards a language: Malay is now associated with urban, rather than rural use; with majority rather than minority status on a national stage; with a superior, capitalist mode of economy rather than the traditional feudal economy; with political domination at all levels of government; with a modern way of life rather than traditional ways; and with education.

The outcome of this process of functional attrition has thus been the marginalization of some of the largest indigenous languages in their own, previously monolingual communities. Even if one accepts Errington's (1998 *passim*) thesis that this represents merely a realignment of the roles of the various languages rather than the beginning of the wholesale replacement of the regional languages even for everyday conversation that Geertz (1960) had foreseen, it nonetheless constitutes a significant retrenchment of these languages which, ultimately, limits the degree to which they wholly represent the world view of their speakers. Even when it does not presage the disappearance of a language altogether, functional attrition as a type of language endangerment can, thus, have similarly detrimental consequences.

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DAWKINS' *THE ANCESTOR'S TALE*: A LINGUIST'S VIEW

ROBERT ORR

The stunning thing is that, for particular genes, you are more closely related to some chimpanzees than to some humans.... Humans as a species, as well as humans as individuals, are temporary vessels containing a mix of genes from different sources. (Dawkins 2005:63)

RICHARD DAWKINS' ACCLAIMED WORK *The Ancestor's Tale: A Pilgrimage to the Dawn of Life* (2005), which traces life back to its origins, starting from humans, contains a great deal of material of interest to linguists. Biological and linguistic evolution are not exact analogues; as Dawkins himself points out (26), to take one item, the latter takes place far faster than the former. Most linguists would find much of this material self-evident, but it is nonetheless worthy of comment. As the book runs to nearly 700 pages, the present review will home in on certain points raised by Dawkins and discuss them, undoubtedly omitting certain topics which could be taken up with profit.

Briefly, Dawkins 2005 is loosely modelled after Chaucer's *Canterbury Tales*, where the eponymous tales themselves, some originals, and others not, are contained inside a frame tale narrated by a group of pilgrims on the way from Southwark to Canterbury Cathedral to visit the shrine of Saint Thomas Becket. Dawkins' animal pilgrims embark on a path to find their common ancestor, many contributing to the overall tale of the evolution of life. Following this model, Dawkins describes the tracing of life itself, right up to its very source. Starting with modern humans, Dawkins conducts us on a pilgrimage back to the hypothesised origin of life,¹ backwards along the branches of a sort of reverse family tree. As we travel backwards, we meet on the way larger and larger groups of related life-forms at about

¹ To some extent, a closer literary analogue to the reverse evolutionary process (although the actual biology might leave something to be desired!) described by Dawkins than the *Canterbury Tales* is provided by Clark Ashton Smith in *Ubbo Sathla*, where the protagonist is carried back in time to the origin of life through looking into a mysterious crystal:

There was a sense of abysmal falling, a suction as of ineluctable winds, of maelstroms that bore him down through fleet unstable visions of his own past life into antenatal years and dimensions. He seemed to endure the pangs of an inverse dissolution; and then he was no longer...the wise and learned watcher of the crystal, but an actual part of the weirdly racing stream that ran back to re-attain the Beginning.

He seemed to live unnumbered lives, to die myriad deaths, forgetting each time the death and life that had gone before....He became a barbarian of some troglodytic tribe, fleeing from the slow, turreted ice of a former glacial age into lands illumed by the ruddy flare of perpetual volcanoes. Then, after incomputable years, he was no longer man, but a man-like beast, roving in forests of giant fern and calamite, or building an uncouth nest in the boughs of mighty cycads.

forty respective nodes, which Dawkins dubs 'rendezvous'—first primates, then various other mammals, then birds, fish, and finally invertebrates, of ever-decreasing complexity in succession.

Historical descriptions of individual languages tend to start in reconstructed periods, e.g., Indo-European, Common Slavic, and then trace developments to the modern period, in contrast to the approach adopted by Dawkins. An exception is provided by Strang (1970), which discusses language changes in English that have happened within living memory, and then traces its history backwards in 200-year blocks: 1970–1770, 1770–1570, 1570–1370, etc.

One way of approaching this review, therefore, would be to try and do the same for language, starting with, e.g., English, and tracing it back to the origin of language itself. Such an approach would be unprecedented (Strang only goes back to Indo-European, which already has hundreds of thousands of years of linguistic development behind it, see Orr 2007), and rapidly becomes bogged down. Serious problems would arise even before one got to the first rendezvous (which would be what? Scots? Jamaican Creole? Forth and Bargy Hiberno-English?). The history of even such a comparatively well-attested language as English presents a great deal of difficulty in such an exercise, see, e.g., Dixon (1997:45–46). From the point of view of direct genetic ancestry English would in theory first rendezvous with the other Ingvæonic² languages, e.g., Frisian. However, at the same time English would have had a close encounter, which left a major mark, with French, and then Scandinavian, followed by a rendezvous at the Common West Germanic and Common Germanic nodes (which would involve resuming contact with Scandinavian) and then the rest of Germanic, while sustaining varying degrees of contact with various branches of Celtic (probably to some extent Slavic, too, see Martynov (1996, 1998)).

But even the citation of such intertwinings does not begin to encompass the potential complexity of language contact. It is a truism that all language contact goes on inside an

Through aeons of anterior sensation, of crude lust and hunger, of aboriginal terror and madness, there was someone—or something—that went ever backward in time.....And the thing that had been Paul Tregardis...was a part of all the monstrous devolution. It flew with the claw-tipped wings of a pterodactyl, it swam in tepid seas with the vast, winding bulk of an ichthyosaurus, it bellowed uncouthly with the armored throat of some forgotten behemoth to the huge moon that burned through primordial mists,...it became one of the lost serpent-men who reared their cities of black gneiss and fought their venomous wars in the world's first continent.....Through years and ages of the ophidian era it returned, and was a thing that crawled in the ooze, that had not yet learned to think and dream and build.There, in the grey beginning of Earth, the formless mass that was Ubbo-Sathla reposed amid the slime and the vapors. Headless, without organs or members, it sloughed from its oozy sides, in a slow, ceaseless wave, the amoebic forms that were the archetypes of earthly life. (<http://www.eldritchdark.com/writings/short-stories/224/ubbo-sathla>, accessed May 20, 2008)

² There are problems associated with the terms 'Ingvæonic', 'West Germanic', etc. For the purposes of this discourse, these, and equivalent ones in Slavic, will simply be taken as given. Oddly enough, these problems appear very similar to some of those cited by Dawkins as he picks his way through relationship among the primates closest to humans.

individual speaker's head. To gain a complete picture, therefore, one might have to draw any tree diagram to accommodate myriad contacts involving numerous individual influential speakers. The reach and extent of attested language change has often obscured this fundamental point. But on occasion it just takes one speaker to have a role in language change: Peter the Great might be said to be responsible for Russian-Dutch contacts, in the form of loanwords from Dutch into Russian, see Kiparsky (1975:111–21), also Kallio (2006:163) for a more theoretical suggestion.

Another issue is raised by the status of literary canons: great works which provide bodies of quotes which become part of the idiomatic stock of the respective language. If such canons are, in turn, under heavy foreign influence, this may have some effect on the language. Dr. Johnson's well-known assessment of Milton comes to mind: "He was desirous to use English words with a foreign [Latin] idiom," which had a palpable effect on the structure of many of his phrases. A more startling example is provided by Morzinski (1994), who shows that Joseph Conrad, usually considered a master of English style, was actually influenced by his native Polish to a considerable degree; Morzinski devotes whole chapters to areas such as aspect (43–67) and Conrad's use of voice (69–92).³ The issue is further complicated by a discernible reduction in Polish influence over Conrad's literary career (118). In biology it would be impossible for such an analogously remotely related single specimen to have such an influence on a whole species. How, then, are the contacts described for Milton and Conrad to be captured in any linguistic family tree? In this context the quote from Dawkins cited at the beginning of this paper takes on a new significance: it appears to fit linguistics far better than evolutionary biology. The next logical step, then, is to touch on the whole issue of the family tree in the two fields.

1. FAMILY TREES. This review may commence by recalling Dawkins's opening quotation (2005:63), which illustrates the difficulties involved in writing a similar book about linguistics. For linguists, it would have been impossible to express such surprise in the writing thereof; the comment, with suitable changes of terminology, is commonplace, as a glance at the external history of almost any language would show, the more so as Dawkins compares genes to morphemes (190), which are frequently borrowed.

The family tree model cannot be separated from any part of Dawkins's framework. It has been applied to linguistics and biology for as long as the two disciplines have been in existence, and appears equally problematic in both. The very structure of Dawkins (2005) involves tracing a sort of family tree, along one branch, as it were. Dawkins suggests that this is the most complex part of the book (129 fn.). He touches on the complexity of family trees (128), cladograms (140), and gene trees (142, 161–62).

Dawkins himself (133–39) cites a linguistic analogy for the family tree in biology: the history of manuscript copying, specifically Chaucerian manuscripts, and he illustrates to what extent their development and relationships may be represented in a family tree-type diagram or cladogram.

³ In reading Morzinski's description of this area of Conrad's style, one is struck by the number of times that Schenker's (1988) framework, which links the Indo-European middle and Slavic reflexive constructions semantically, can be made to fit here.

One important difference between language and biology is that life can mostly be traced back to a point close to its origins, even if the origin itself remains obscure, whereas we are very far from able to do so with language, thus making Dawkins' framework at best premature for linguistics, as discussed above. The recent advances in molecular taxonomy have allowed evolutionists to make some startling changes to the organisation of family trees and to clarify certain relationships. In this context Dawkins refers to dogs (30), colugos (184–185), hippos, whales, and artiodactyls (203–10) and to molecular taxonomy as a whole (390–391, 410); there has been no equivalent development in historical linguistics.

Many linguists would suggest that language may be reconstructed back beyond Indo-European, to a stage often called Nostratic, which would cover most of Asia and a chunk of Africa. Although much of the relevant material remains inaccessible, the overall concept of Nostratic seems as well-grounded as the laryngeal theory in Indo-European. There are several features ascribed to Nostratic which deserve further discussion, e.g., the widespread use of a dental stop to form some sort of preterite, also extending to Japanese. These cannot be wished away, and certainly deserve some sort of discussion, even if some advocates of Nostratic have been guilty of excesses. Thus the skepticism expressed by Dawkins regarding Nostratic (22–25) is unjustified, and he certainly should have consulted a wider range of historical linguists than he hints. Yet even a Nostratic as well reconstructed as Indo-European, which is itself on a shakier basis than many of us would like, would leave us with hundreds of thousands of years of linguistic history to trace.

In linguistics there are many metaphors for the family tree, see Orr 2005 and the literature cited therein for a synthesis of various approaches to the family tree in linguistics and for further exposition, e.g., the wave theory; Gould's punctuated equilibrium (1991), and Dixon's adaptation thereof (1997); Shevelov's cloud metaphor (1953, 1964, 1979); Wolpoff and Caspari's river splitting up into channels, recombining, and then splitting up again (1997); Van Driem's patch of leaves on the forest floor (2003); Tattersall's art and diagram (2002); and my own analogy of mountains covered in low cloud (2005).

Dawkins' own thinking on this issue appears to have advanced over the years. In earlier work (1988:259–60) he cites relationships among the Scandinavian languages, hinting at an apparent difference between linguistics and biology: the fact that animal species allegedly never merge or converge, or jump from one branch of a family tree to another (let alone from one tree to another!), whereas different languages often do. His quote at the opening of this paper shows that his thinking has become slightly more nuanced here.

2. "HARD SCIENCES." In numerous works, especially Gould (1991), the late Stephen Jay Gould decried the ranking of "hard sciences" (mathematics, physics, etc) above "soft sciences" (paleontology, etc.). Nevertheless Dawkins (2005:15) cites Gould in claiming that "...no paleontologist has any trouble identifying whether a given lump of rock lies before or after the great end Permian extinction. There is almost no overlap in animal types. Indeed, fossils (especially microfossils) are so useful in labelling and dating rocks that the oil and mining industries are among their principal users"; see also Fortey (2000:188–89, 197–98) for similar treatment, which seem to indicate an evolution in Gould's thinking as well. Dawkins' apparent endorsement of a less rigid hierarchy among the sciences is welcome, see

Orr (2006). As with so many other issues, the problem raised here was captured by G.K. Chesterton, in one of his Father Brown stories, *The Mistake of the Machine*,⁴ which includes a succinct description of the human factor, and the unpredictable, arbitrary nature of its mostly inevitable intervention, which spills over into the so-called hard sciences:

[R]eplied Greywood Usher, '...in my opinion, that machine can't lie.' [Father Brown]: '...nor can it tell the truth. You always forget... that the reliable machine always has to be worked by an unreliable machine... I mean Man,... the most unreliable machine I know of.'

3. DAWKINS ON WRITING VS. SPEECH: PRONUNCIATION VS. ORTHOGRAPHY. This is one of the most important and frequently discussed issues treated in linguistics. Dawkins (2005:17) devotes a fair amount of discussion to it. He starts off from the transmission of evidence via document copying, and goes on to discuss the relationship between orthography and phonetics, although he himself does not put things quite that way, stating that "Letters of a true alphabet are discontinuous," with no overlap, which is not quite true, cf. **c**, **k**, and **q** in English, all of which are used to denote a voiceless velar stop, or **и**, **і**, and **Ѹ** (**i**) or **е** and **ѣ** (**e**), in pre-1918 Russian Cyrillic.

He selects what must clearly be the aspirated/non-aspirated contrast, using examples from French (17), where the **c** in, e.g., *comme* is clearly unaspirated and unvoiced, "a sound intermediate between English *c* (voiceless aspirated) and *g* (plain voiced)" and states "each language... separately uses the alphabet for self-normalising on different sounds." French therefore contrasts voiced and voiceless non-aspirates. However, in many cases aspiration is often represented in the orthography as well, if it is sufficiently distinctive enough acoustically and is phonemic, i.e., it can be used to distinguish words, morphemes, etc.⁵ This phenomenon is language-specific, e.g., **t'ang* (t-hang) and **tang* distinguished only by aspirated and non-aspirated [t] are not separate words in English, as are *tang* and *dang*(!) whereas *dǎng* 'political party' and *tǎng* 'funds', with aspirated and non-aspirated [t] respectively, are in Chinese. Therefore these distinctions are distributed differently between English and Chinese: aspiration is contrastive in Chinese and voicing is contrastive in English.

As the phonetic elements in Chinese characters tend to represent the codas of syllables rather than onsets, and the aspirated/non-aspirated contrast operates only at syllable onsets, it may be stated that Chinese does not distinguish aspiration as such in its

⁴ <http://etext.library.adelaide.edu.au/c/chesterton/gk/c52fb/chapter17.html>, accessed May 28, 2008.

Despite Dawkins's vigorously professed atheism (most recently 2006), it may be not be out of place to note that he quotes the Old Testament on at least two occasions to illustrate his points: Ecclesiastes 1:9–10 (210) and Ezekiel 37:7–9 (573). This recalls another passage from G.K. Chesterton: "You all swore you were hard-shelled materialists; and as a matter of fact you were all balanced on the very edge of belief—of belief in almost anything... that's why.... *Mr Alboin quotes Scripture* for his religion of breathing exercises." (emphasis added) *The Miracle of Moon Crescent*, <http://etext.library.adelaide.edu.au/c/chesterton/gk/c52fb/chapter28.html>, accessed 2008.05.28.

⁵ One helpful definition of phoneme that might be used here is "the smallest unit of sound which can change meaning," as illustrated by the contrast between English *tang/dang* and Chinese *dǎng/tǎng*.

conventional writing system. Nevertheless all the Romanised scripts used for Chinese distinguish aspirated and non-aspirated phonemes (for most Westerners, the pinyin Romanisation favoured by the PRC obscures this difference, using “t” for aspirated t, and “d” for nonaspirated, e.g., *dǎng* ‘political party’ / *tǎng* ‘funds’).

Indo European is normally reconstructed as having three series of stop consonants, which are conventionally reconstructed as voiceless, voiced, and voiced aspirated. The point to note here is that Greek changed these into voiceless, voiced, and voiceless aspirated, with the voiceless aspirates being allotted a separate set of consonants (θ – theta, χ – chi, and φ – phi). Modern Greek pronounces the latter as voiceless fricatives (*th*, *ch* as in *loch*, and *f*, respectively), but there is overwhelming evidence that they were pronounced as voiceless aspirates in Classical Greek, see Sihler (2000:187–89, 204–5). Sanskrit, and many modern Indian languages, even have a four-way contrast (voiceless, voiceless aspirated, voiced, voiced aspirated, and this is shown in the Devanagari syllabary, which has separate symbols for, e.g., *ta*, *tha*, *da*, and *dha*).

3.1. VOWELLESS LANGUAGES. This line of thought in turn leads us to the issue of vowelless languages, on which Dawkins also offers comments. Over the years Dawkins has made great use of what he calls the “argument from personal incredulity,” of which he accuses others, especially religious figures (see especially 1988:38–40, also 2005:512). During the discussion of vowelless languages, however, Dawkins falls into the same trap. His statement “If written Hebrew can be intelligible without vowels, I don’t see why spoken Neanderthal and Ergaster couldn’t too” (2005:71) perhaps inadvertently may be used to illustrate a point that is self-evident to linguists, but often forgotten: the fact that hypothetical one-vowel languages are often artifacts of the respective theoretical approach, and, to the linguistically unsophisticated hearer, sound as though they have full ranges of vowels, albeit predictable from the quality of the flanking consonants. See Orr (2007:458–59, and the literature cited therein) for further discussion.

This issue may be further illustrated by glancing at the interplay between orthography and phonology in Russian and Irish. Russian has a fairly full range of hard/soft consonant pairs. In analyzing Russian it can be shown that *actually* it is the *consonants* that are distinctive, whereas acoustically (superficially) the *vowels appear* to be more distinctive.⁶ In fact, Russian and Irish orthography illustrate the dichotomy very nicely: the use of the Cyrillic alphabet to provide an orthographic representation of Russian is actually the product of a fair bit of evolution, both on the macro and micro levels. Suffice it to say here that there are *ten* vowel letters, but only *five* vowel phonemes (**а е и о у**), the disparity being accounted for by recalling that one way of rendering the (phonemic) distinction between hard and soft consonants is through the use of different vowel letters (the consonants in the combinations **та** and **тя** are phonemically distinct, but this contrast is shown by the vowels, see Hamilton (1976),

⁶ On one level viewing the consonants as basic is theoretical; Jakobson, Fant and Halle (1967:8) cite an example from Russian where, during a telephone conversation the verbs *ceперюм* ([ʃɪɐ̞jɐ̞t]) ‘are grey’ and *чыперюм* ([ʃɪɐ̞jɐ̞t]) ‘are damp’ had to be distinguished by emphasizing the unstressed *vowels* in the first syllables, even though the *consonants* are phonemic.

sometimes leading linguistically unsophisticated teachers of Russian to use "soft vowels" as a pedagogical device). Irish actually has a similar system of hard and soft contrasts. Further, in discussing the phenomenon Dillon and Ó Cróinín (1960:11) put it thus: "If you pronounce the slender [soft] consonants correctly, the [unstressed] vowel will take care of itself." Irish uses the Roman alphabet for hard and soft consonants, again making use of vowel letters to render a consonantal distinction. The forms *mbionn*, *mbuion*, *maoin*, and *mín* are phonetically [m'i:n], [mi:n], [mi:n'], and [m'i:n'] respectively, but note that the contrasts in the consonants are shown in the orthography by the vowels (Dillon & Ó Cróinín 1960:9).

Returning to Dawkins' quote about written Hebrew being intelligible without vowels, it misses rather a fundamental point. Hebrew actually has a fairly standard vowel system. The point not to be lost sight of is that early Middle Eastern alphabets only used to represent the consonants orthographically, but this does not mean that they lack vowels. *This point will become clear when you read this sentence.* Hebrew and its ancestors would have been spoken in one form or another for hundreds of thousands of years (see Orr 2007) before being committed to writing, and it would always have included a range of vowels. The lack of orthographical representation of vowels in Hebrew and Arabic is a more extreme manifestation of the overall phenomenon, also noted by Dawkins (2005:17), of not representing aspiration in English orthography, or the lack thereof in French and Italian. In that context, therefore, spoken Neanderthal and Ergaster may well have been perceived by hearers as having a fairly full range of vowels (insofar as coeval listeners would have thought about such issues at all).

4. SYSTEMS OF LINGUISTIC AND BIOLOGICAL CLASSIFICATION AND NOMENCLATURE. Neither biology nor linguistics are totally consistent in their respective nomenclature. Names of languages, ethnicities, species, and life-forms are more ephemeral than they might seem, and should be considered separately in this context. Nomenclature frequently gives rise to further confusion when even older records are considered. For example, at an earlier stage of scholarship there was a great deal of confusion about the names and status of the various great apes, discussed by Dawkins, who points out that chimpanzees were sometimes called "black oranges" in Darwin's time (107–8).

Quammen (2000:153–155) points out that in 1699 Edward Tyson classified the recently discovered chimpanzee in the genus *Homo*, along with humans, christening it *Homo sylvestris* 'man of the woods' (cf. Indonesian *orang utan*!) as opposed, of course, to *Homo sapiens*. Ley (1966:334–54) documents the multiplicity of names which were used to denote the Dodo of Mauritius, in English, French, Portuguese, Dutch, and German, each with a few orthographical variants, arising from misinterpretations, e.g., *dodo*, *dodaerts*, *dronte*, *walghvogel*, *dinde sauvage*, *gekapte zuwaan*, etc.⁷ Mortenson (2004) offers a comprehensive discussion of the issue.

⁷ This state of affairs was even extended to the dodo's scientific name. *Raphus cucullatus* and *Didus ineptus* (Dawkins 2005:282) were coined independently, and eventually it was decided that the former was to be allotted priority. A similar situation prevailed in the naming of dinosaur fossils: *Apatosaurus* has officially replaced the more popular *Brontosaurus*, and *Antrodemus*, originally competing with *Allosaurus*, has been dropped. Dawkins also cites the case of *Basilosaurus*/*Zeug-*

An interesting example, not cited by Mortenson, is provided by the folksong “The Poachers”, which refers to “wolves and tigers upon Van Diemen’s Land”. The “wolves” and “tigers” actually refer to just one animal, the “Tasmanian tiger”, which, moreover, as a marsupial, is less closely related to wolves and tigers than humans are. While these examples, and many others like them, are great fun, they have absolutely no effect on the biology of the said animals.

Within language, an interesting, similar shift has taken place, within living memory, in French Canada. Until well into the 1950s French Canadians would refer to themselves as *les canadiens*, and to English-speaking Canadians as *les anglais*. Latterly the former term was expanded to *les canadiens français*. In the sixties and seventies, however, as French Canada became more and more identified with Quebec, the term *québécois* began to be applied to French Canadians (a competing term, *les laurentiens*, did not gain much popularity), and *les canadiens* fell out of use in this context.

Examples where actual languages, as opposed to overall ethnicities, change their names are rarer, but still attested. The external history of Scots and Gaelic is instructive: Sweeney-Turner 2000 traces briefly a change whereby over the course of the fourteenth century the name *Scottis* was transferred from the “Celtic language of the North” to the “Germanic language of the South [of Scotland],” which had previously been called *Inglis*, while the “Celtic language of the North” dubbed *Erse/Ersche* ‘Irish’ when the *Inglis* → *Scottis* shift took place, is nowadays usually referred to as Gaelic. There are also cases where the denotations and connotations of languages meaning vaguely ‘foreign’ may change over the years. The West Germanic form **walisk-* developed into English *Welsh*, Dutch *Waal* ‘Walloon’, earlier (‘French’), and German *welsch* ‘Romance’, none of which refer to the same ethnic group.

One analogy from biology, which might be very helpful, is the difference between systems of classification and the animals themselves, e.g., ‘lion’ remains the same animal whether it is classed as *Panthera Leo* or maybe, e.g. in Czech, *lampa lev* (Dawkins 2005:25) and a hippopotamus (ὁ ἵππος ὁ πταμος) is not a horse, as Dawkins points out (203); Russian *bezemom* (from *behemoth*) is more accurate. Similarly, the changes in nomenclature from *Scottis* via *Erse* to *Gaelic* and *Waal* to *Frans*, cited above, had absolutely no effect on the structures of the respective languages.

5. EDDIES. An ‘eddy’ in linguistics and biology may be defined as ‘any current that goes against the general trend of an overall linguistic change, or is at the periphery of such a change’, see Orr 2003⁸ where I discuss some linguistic examples from Common Slavic (*ŭ*-stems, **ŭ*-stems, and **s*-stems; the evolution of *have*, and Dutch loanwords in Russian), and two possible such phenomena in biological evolution: the aquatic ape theory, according to which humans spent some time as partially aquatic mammals, and then returned to land, while preserving many of the features that point to an aborted evolution in the

lodon (205). Sometimes even forms in *-saurus* (dinosaurs) and *-therium* (mammals) are found in competition, e.g., *Chirosaurus/Chirotherium*.

⁸ The concept of eddies resulted from developing certain lines of speculation hinted at by Janda, see Orr 1997, where I discuss her examples of expansion of formally peripheral categories in Slavic (the *ŭ*-stem’s 1st singular athematic ending, and the dual endings), and go on to develop the idea of linguistic eddies (Orr 2003).

direction taken by whales, seals, and manatees, and neoflightlessness in dinosaurs (Orr 2003:276–79) and the literature cited therein.

In this context, after my own attempt to introduce the term eddy into linguistic and biological discourse, it is gratifying to see Dawkins (2005:101, 266) actually making use of the concept to illustrate the development of various phenomena in evolutionary biology. He suggests that bipedality in humans may also be the result of what he later terms an evolutionary eddy, see also Filler (2007, especially 191–223). The acceptance of eddies as a biological phenomenon, fuelled by comparison with historical linguistics, has interesting implications for evolutionary theory.

5.1. **DOLLO'S LAW.** At first glance the concept of eddies may appear to be in violation of Dollo's Law, according to which organs, once lost, cannot reevolve (cited by Dawkins 2005:102–3 and 356–57, 1988:94; see also Desmond 1977:161). Dawkins points out that the concept of eddies does not violate Dollo's Law, as the entities which reemerge after undergoing eddies are never absolutely identical to those that preceded them. If Dollo's Law were applied to historical linguistics as well, it would not be violated either: the phenomena suggested as linguistic eddies in Orr (2003), e.g., the *ũ*-stems, **ũ*-stems, and **s*-stems, did not return to their previous status after their expansion and contraction, but left enough traces for us to be able to map the course of the eddy in outline.

In a subsequent article Dawkins (2005a) offers an example of multiple eddies, suggesting that modern land tortoises have changed their environment three times, e.g., sea lions, turtles, and... tortoises have undergone three stages (water-land-water), and modern land tortoises, uniquely, four (water-land-water-land), and asks "Can there be another animal for whom the genetic book of the dead is such a palimpsest of multiple evolutionary U-turns?"⁹

6. **RELATIVE DEGREES OF ARCHAISM.** The vital question here is posed by Desmond (1977:210): "... but what does it mean that one group of animals [or language; emphasis mine - RAO] is older than another?" In historical linguistics 'more archaic' and 'less archaic' are also relative terms, to be used with a degree of caution. To take one fairly obvious, albeit extreme, example, probably no scholars would rate English as 'more archaic' than German, or Slavic more archaic than Lithuanian overall, and yet for certain features, in phonology, morphology, and syntax, this is a fair statement. In Orr (2000:91–93) I give lists of seven features, covering phonology, morphology, syntax, and lexicon where English is more archaic than German, and nine where Slavic is more archaic than Lithuanian.

6.1. **FRENCH AND SPANISH.** A similar list of features might be drawn up for French and Spanish. Normally Spanish is considered more 'archaic' than French, but this is not true of all features:¹⁰

1. The maintenance of Latin *cl*- clusters in French, e.g., French *pleut*, Spanish *llove*.

⁹ <http://books.guardian.co.uk/review/story/0,,1425412,00.html>, accessed May 23, 2008.

¹⁰ I would like to express my thanks to Stephane Goyette for providing this list, and discussion.

2. The maintenance of Latin initial *f* in French versus its loss in Spanish, e.g., French *feuille*, Spanish *hoja*.
3. The maintenance of the Latin 3rd singular ending **-t* under some circumstances in French as opposed to its total loss in Spanish, e.g., French *vient-il?* Spanish *¿viene?*
4. The maintenance of *être* as a past tense auxiliary in French as opposed to its loss in Spanish.
5. The maintenance of *seize* < Latin *sedecim* in French as opposed to its loss in Spanish.
6. The maintenance of older kinship terms in French as opposed to their loss in Spanish, e.g., French *frère* < Latin *frater*, *soeur* < Latin *soror*, Spanish *hermano*, *hermana* < Latin *germanus*.
7. The maintenance of certain lexical items in French as opposed to their loss in Spanish, e.g., *fenêtre*, *chien*, *âne*, etc.

Dawkins (2005:242) deals with precisely this issue in his treatment of the beak of the platypus as an example of how the term 'archaism' can be misleading; in many ways, such as, e.g., the duckbill itself, the platypus is very sophisticated. Juxtaposition of these examples may be used to drive home the point that in both historical linguistics and evolutionary biology, and probably in many other fields, 'more archaic' and 'less archaic' are relative terms, to be used with a degree of caution.

7. THE RING SPECIES PHENOMENON. Dawkins (2005: 308–320) devotes some discussion to the phenomenon of "ring species," which he defines as:

...cases of unbroken gene flow continua, taking the geographical shape of rings, with gradual differentiation as one moves along the ring, in either direction. At one point in such rings, however, there is an abrupt break, the site of a collision between two originally closely related forms, separated for a prolonged period, and divergent as a result, and then from which prehistoric migrations may be traced back to their approximate origins.

He cites two examples, one on a comparatively local scale (salamanders of the genus *Ensatina* around California's Central Valley; 309–11), and one on a global scale (the apparently distinct species of seagull known as herring gulls and lesser black-backed gulls in Britain actually form two ends of a similar ring stretching all the way round the Northern Hemisphere; 311). The salamanders do not actually live in the Central Valley itself, but any mapping of breeding populations in the mountains all around the valley shows subspecies shading in to other subspecies, with an abrupt break at the south end of the valley.

7.1. LINGUISTIC RINGS. The same phenomenon appears to exist in language. Two examples of such ring continua, albeit broken, may be traced within Slavic, with their respective abrupt breaks on the border between East Slavic and Polish, and the Vidin-Osogov line in

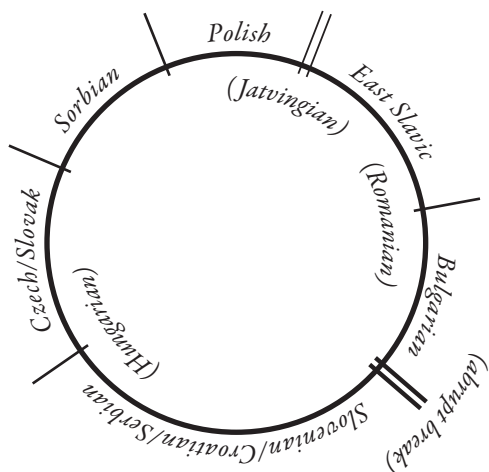


Figure 1. Linguistic ring of Slavic languages.

the Balkans, both of which can be traced back to early migrations among the Slavs, see Ivić (1956:12–18), Sławski (1962), Dalewska-Greń (1997).

In the case of Vidin-Osogov (separating Serbian and Bulgarian) we are probably dealing with two different waves of Slavic migration to the Balkans, which started off from different points further north and then later collided further south. This can be clearly seen if we note that Serbian merges gradually with Croatian, which in turn merges with Slovenian. Dialectal data from North-West Slovenian and Central Slovak point to a situation where Slovenian would in turn have merged with central Slovak dialects if the Hungarians had not sliced through that part of the Slavic dialect continuum. Further east, North-Eastern Bulgarian shows similar evidence of a severed link with South-Western Ukrainian. The history is not as clear here, as this time Romanian sits athwart the severed link, as shown in **Figure 1**.

It might be noted that the break between East Slavic and Polish depicted above is rather the result of their apparent original separation by Jatvingian, an extinct Baltic language, whose speakers shifted to East Slavic in the East and Polish in the West.

In order to reinforce this framework, it might be noted that Holzer (2006:137–138) proposes that two separate Slavic migrations might be traced: the first one, would have covered the area between the Gulf and Finland and the Lower Danube, to be followed a later expansion to the South and West.

8. CONCLUSION. From the above it may be seen that several of the topics dealt with by Dawkins (2005) may be viewed with some profit by historical linguists: family trees, “hard sciences”, writing vs. speech, classification and nomenclature systems, eddies, relative degrees of archaism, and ring species. It has been argued above that in all of these areas linguistic points of view can shed light on the overall issues, and both fields would benefit from interdisciplinary discussion, especially in the areas of eddies and ring species.

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THROUGH A BORROWED MOUTH: REPORTED SPEECH AND SUBJECTIFICATION IN KOREAN

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QUOTATION IS A MEANS OF REPORTING AN UTTERANCE. Since it is practically impossible, and often unnecessary, to replicate in its entirety the original utterance including such difficult elements as its physical properties, quoted utterances are subject to modification by the reporter. Such modification occurs in various ways largely due to the reporter's discourse strategies and subjective judgment about the state of affairs. Quotations in Korean, as in many other languages, are linguistically realized by various devices, but most notably by the use of complementizers. Korean complementizers, i.e., *-tako*, *-lako*, *-nyako*, and *-cako*, historically were grammaticalized from a combination of grammatical and lexical morphemes. Very interestingly, however, some of the complementizer constructions deviated from their course of grammaticalization, and were deflected into lexicalization. This new development of lexicalization is a process that may be characterized as an excellent example of subjectification. Despite its intriguing nature, this process has not received attention to date, and this paper intends to fill this gap.¹

1. PRELIMINARIES. Complementizers are a means of clause combination, whereby a clause-complement is brought into a matrix clause. Before the development of complementizers, Korean had three types of clause combinations using direct quotations for reported speech as in (1):

- (1) a. *Type 1: Juxtaposition of a statement and a direct quotation*: [Lead Statement]
[Direct Speech]
- b. *Type 2: Non-finite main clause combination*: [say-Connective [Direct Speech]]
- c. *Type 3: Embedded direct speech*: [[say-Connective [Direct Speech] [say]]]

A Type 1 quotation is, in fact, a mixed writing of the speaker's text language sentences and the quoted meta-text language sentences. Differentiating between these two types of text is difficult for the reader who should make use of contextual cues and linguistic signals such as the uses of pronouns and shifts in tense, formality, etc. A Type 2 quotation is unique in that the sentence ends with the direct speech, an extraordinary situation for a quotation in

¹ This research was supported by the 2007 Hankuk University of Foreign Studies Research Fund. It is part of a larger scale study on complementizers. See Rhee (2007b) for a more comprehensive description of the grammaticalization processes of complementizers. Special thanks go to the anonymous reviewers for their comments and suggestions. All remaining errors, however, are mine.

this head-final language since it does not end with the main clause verb. A Type 3 quotation is the most common type of quotation used before the grammaticalization of complementizers. It is closest to an ordinary modern quotation construction, with the only difference being that it lacks a complementizer. It is from this syntagmatic configuration that the quotative complementizers were grammaticalized, as shall be discussed in more detail later.

Another notion that plays an important role in this paper is subjectification. In Traugott's terms, subjectification can be defined as a pragmatic-semantic process whereby meanings become increasingly based in the speaker's subjective belief state or attitude toward the proposition (Traugott 1982, Traugott & König 1991). Therefore, subjectification is essentially a process whereby speaker involvement is reflected in semantic change (Rhee 2007a). Traugott and Dasher (2002:30) point out that it is very wide-spread, and is the most pervasive type of semantic change identified to date. A large body of literature shows its attestation in grammatical and lexical change across languages (Traugott 1982, 1989; Stein & Wright 1995; Traugott & König 1991; Traugott & Dasher 2002; Rhee 2007a, 2007b, *inter alia*). For instance, the close relationship between subjectification and grammaticalization has often been addressed in literature. Traugott (1982, 1989) and Traugott and König (1991) show how the meaning of English *after* is subjectified as in (2), from space to time to cause;² Rhee (2007a) shows how English prepositions *for* and *before*, both developed from the same lexical source Old Teutonic and OHG *fora* 'front', were subjectified as shown by the summarized paths of semantic change in (3).

- (2) a. Shut the door *after* you.
 b. Brush your teeth *after* breakfast.
 c. *After* we heard the lecture we felt greatly inspired.
- (3) a. *for* (< 'front'): frontal location → temporal anteriority → representation → cause/reason → support/benefit → purpose → destination → fitness → advantage/dis-advantage
 b. *before* (< 'front'): frontal location → temporal anteriority → visibility → prospect → superiority → preference

Lexicalization often involves subjectification as well (Traugott & König 1991, Traugott & Dasher 2002). For instance, English verbs *prefer* and *rather* now carry the preference meaning as a consequence of subjectification from the mere 'carry before' and 'more quickly' meanings, respectively.

2. GRAMMATICALIZATION OF COMPLEMENTIZERS. Despite the controversy with respect to the specific first historical attestation (cf. Kim 1994 for 1637 and Ahn 1991, 2003 for 1763), it is in Early Modern Korean (i.e., the 17th and 18th centuries) that the quotative marker

² As one of the reviewers notes, presumably causative *after* retains its temporal significance. Retention of the semantics of the source structure in grammaticalized forms is common (cf. 'persistence' Hopper & Traugott 2003).

hAko came into existence. This quotative marker underwent a fusion with the sentential ending of the embedded direct speech, which varied depending on the sentence type, i.e., *-ta* for declarative,³ *-nya* for interrogative, *-la* for imperative, and *-ca* for hortative, as shown in (4). This process of morphological fusion brought forth a complete paradigm of complementizers with four members depending on the sentence type of the reported utterance.⁴

- (4) *-ta/nya/la/ca* + *ha* + *ko* → *-{ta/nya/la/ca}-ko*
 Sentential Ending say Connective Complementizer

The following examples in (5) and (6) show the use of the constructions at the early complementizer stage, before and after the morphological fusion.⁵

- (5) a. *ku-ka ka-n-ta-ha-ko malha-yss-ta*
 he-NOM go-PRES-DEC-say-CONN say-PST-DEC
 (Lit.) 'He said "(I) am going" and said.'
 'He said that he was going(leaving).'
- b. *ku-ka ka-nya-ha-ko mwul-ess-ta*
 he-NOM go-INT-say-CONN ask-PST-DEC
 (Lit.) 'He said "(Are you) going?" and asked.'
 'He asked if (I) was going.'
- (6) a. *ku-ka ka-n-tako malha-yss-ta*
 he-NOM go-PRES-COMP say-PST-DEC
 'He said that he was going (leaving).'
- b. *ku-ka ka-nyako mwul-ess-ta*
 he-NOM go-COMP ask-PST-DEC
 'He asked if (I) was going.'

From a formal perspective, the early constructions undergo reanalysis and phonological reduction. At first, the source construction of the complementizer begins with a coordinated structure. The connective *-ko* in the construction carries the full function of a connective at this stage. It then becomes a part of a complementizer that enables clausal subordination. The structure further undergoes phonological reduction, resulting in the loss of the locution verb *ha-* 'say' (or *hA-*, its older orthographic variant), presumably

³ The ending *-ta* for declarative sentences participating in the development of complementizer has an allomorph *-la*, which is used with the present-tense copular *i-* 'be' only. The allomorphy relation between these two forms exists only in their complementizer function, not in the sentential ending function.

⁴ The verb *ha-* is polysemous with 'say' and 'do' meanings. In Present Day Korean, it is more commonly used for the 'do' meaning.

⁵ The following abbreviations are used in glosses: ACC: accusative; CAUS: causative; COMP: complementizer; CONN: connective; DEC: declarative; FUT: future; HORT: hortative; IMP: imperative; INST: instrumental; INT: interrogative; NMN: nominalizer; NOM: nominative; PROH: prohibitive; PRES: present; PST: past; TOP: topic; and TRL: trial.

because of the low phonetic salience of [h] and the overlapping of [a] with the preceding vowel (Rhee 2007b), as shown in (7).

- (7) Coordinated Structure → Subordinated Structure → Phonological Reduction
- | | | |
|---|-------------------------------|-------------------|
| a. ... <i>ta</i>]- <i>ha</i>]- <i>ko</i> | ... <i>ta</i>]- <i>hako</i> | ...- <i>tako</i> |
| b. ... <i>la</i>]- <i>ha</i>]- <i>ko</i> | ... <i>la</i>]- <i>hako</i> | ...- <i>lako</i> |
| c. ... <i>ca</i>]- <i>ha</i>]- <i>ko</i> | ... <i>ca</i>]- <i>hako</i> | ...- <i>cako</i> |
| d. ... <i>nya</i>]- <i>ha</i>]- <i>ko</i> | ... <i>nya</i>]- <i>hako</i> | ...- <i>nyako</i> |

3. LEXICALIZATION. After the grammaticalization of complementizers,⁶ some of the forms involving complementizers underwent conceptual change resulting in the creation of lexical forms. On the conceptual level, the lexicalization is due to strong cohesive power among the concepts represented by the participating lexical and grammatical formants. On the formal level, it is largely due to unitization of the string that permitted its reanalysis as a single unit (cf. ‘univerbation’ Lehmann 1995[1982]), rather than being a morphologically complex construction. This type of inter-morphemic cohesion is related to the idiosyncrasies in the Korean language, i.e., sentential arguments are quite freely omitted as long as they are contextually understood and recoverable. When sentential arguments are omitted, the string of morphemes involving the complementizer (i.e., the unit consisting of the main verb of the reported speech and the complementizer) has higher chance of being the only sentential element surviving such an omission, and thus of becoming the sole prominent element.⁷ Furthermore, the final syllable (-*ko*) of these strings triggers the reanalysis of their being adverbials, because the connective -*ko* in its source construction is one of the productive adverbializers in Korean.

With the combination of the conceptual forces and structural idiosyncrasies, the lexicalization process gained productivity; such lexicalization processes are attested with all complementizer types.

3.1. LEXICALIZATION FROM DECLARATIVE COMPLEMENTIZER. The lexicalization process involving declarative complementizers can be diagrammatically presented as in (8), with an example of *cwukkeysstako* ‘desperately’.

- (8) *cwuk-keyss-ta-ha-ko* → *cwuk-keyss-tako* → *cwukkeysstako*
 die-FUT-DEC-say-and → die-FUT-COMP → desperately

As is evident in (8), the adverb *cwukkeysstako* is developed from a partial coordination structure that may be translated as ‘(he) says “I will die” and’ (with the coordination reading), or ‘saying “I will die”’ (with the participial construction reading), which then became

⁶ cf. Rhee 2007b for more discussion on other grammaticalization paths involving complementizers.

⁷ See, however, Section 5.3 for a discussion of multiple word strings that may undergo unitization and be lexicalized.

a complementizer construction, meaning ‘that (he) will/would die’. There is an extensive shrinkage in terms of the formal structure: from a clausal structure to a single lexical item. This type of lexicalization process is also observed in more examples as shown in (9).

- | | | | | |
|-----|--------------------------|----------------------|---|--------------------------------------|
| (9) | <i>kulehtako</i> | ‘still; nonetheless’ | ← | ‘saying “It is so.”’ |
| | <i>cwuknuntako</i> | ‘self-pitifully’ | ← | ‘saying “I am dying.”’ |
| | <i>salkeysstako</i> | ‘desperately’ | ← | ‘saying “I will live.”’ |
| | <i>nacalnasstako</i> | ‘haughtily’ | ← | ‘saying “I am great.”’ |
| | <i>michyesstako</i> | ‘nonsensically’ | ← | ‘saying “I am insane.”’ |
| | <i>calhaypokeysstako</i> | ‘earnestly’ | ← | ‘saying “I will try to do it well.”’ |
| | <i>salapokeysstako</i> | ‘effortfully’ | ← | ‘saying “I will try to live.”’ |
| | <i>mossalkeysstako</i> | ‘in frustration’ | ← | ‘saying “I can’t live.”’ |

3.2. LEXICALIZATION FROM INTERROGATIVE COMPLEMENTIZER. In an exact parallel with the lexicalization process involving declarative complementizers, some of the forms involving interrogative complementizers were lexicalized as shown in (10), with the example of *weynttekinyako* ‘gladly’.

- | | | | | | |
|------|-------------------------------|---|-------------------------|---|-----------------------|
| (10) | <i>weyn-ttek-i-nya-ha-ko</i> | | <i>weynttek-i-nyako</i> | | <i>weynttekinyako</i> |
| | what.kind-cake-be-INT-say-and | → | good.luck-be-COMP | → | gladly |

In the original structure, the expression *weyn ttek* is a noun phrase with a *wh*-modifier that may be translated as ‘what kind of cake?’ inquiring about the kind of occasion that has brought forth a cake, the presence of which has been just noticed by the speaker. It is a Korean tradition that in any celebrations or commemorative events such as the one which honors a child’s 100th day from birth, the first birthday, marriage, burial, memorial, etc., cake is prepared and distributed to the neighbors. People often get to eat cake, brought by their neighbors, without knowing the nature of the occasion associated with the cake. They gladly eat the cake, asking about its background: “What kind of cake is this?” From this well-established cake-distribution tradition, the expression ‘what kind of cake?’ is equated with ‘unexpected good-luck’. When the complementizer clause is lexicalized the expression is considered as a single lexical item signifying ‘gladly’. This type of interrogative complementizer-based lexicalization is attested in more examples as follows:

- | | | | | |
|------|------------------------|------------------|---|--------------------------------|
| (11) | <i>alkeymwenyako</i> | ‘nonchalantly’ | ← | ‘saying “What should I know?”’ |
| | <i>mwusuncisinyako</i> | ‘protestingly’ | ← | ‘saying “What act is it?”’ |
| | <i>mwusunsolinyako</i> | ‘protestingly’ | ← | ‘saying “What sound is it?”’ |
| | <i>kukeyetinyako</i> | ‘appreciatively’ | ← | ‘saying “Where is it?”’ |

3.3. LEXICALIZATION FROM IMPERATIVE COMPLEMENTIZER. A similar lexicalization process is attested with complementizer constructions involving imperatives. The following is an example of *nalsallilako* ‘desperately’.

- (12) *na-l-sal-li-la-ha-ko* → *na-l-sal-li-lako* → *nalsallilako*
 I-ACC-live-CAUS-IMP-say-and → I-ACC-live-CAUS-COMP → desperately

As shown in the example above, the construction headed by the coordinator *-ko*, translatable as ‘say “Let me live.” and’ or ‘saying “Let me live.”’ changes to a complementizer construction with the meaning of ‘that (they) let me live’ and further to a lexical item signifying ‘desperately’. This type of lexicalization is also attested in the following examples.

- | | | | |
|---------------------------|-----------------|---|-----------------------------------|
| (13) <i>sallyetallako</i> | ‘begging mercy’ | ← | ‘saying “Please save me!”’ |
| <i>ttwulbecyelako</i> | ‘attentively’ | ← | ‘saying “Let a hole be bored!”’ |
| <i>pwatallako</i> | ‘begging mercy’ | ← | ‘saying “Please be considerate!”’ |
| <i>cwukelako</i> | ‘desperately’ | ← | ‘saying “Die!”’ |
| <i>nalsallilako</i> | ‘desperately’ | ← | ‘saying “Save me!”’ |
| <i>nalcapamekulako</i> | ‘indifferently’ | ← | ‘saying “Kill and eat me!”’ |

3.4. LEXICALIZATION FROM HORTATIVE COMPLEMENTIZER. The final set of examples for lexicalization is that of the hortative complementizer, as shown with the example of *nacohcako* ‘selfishly’.

- (14) *na-coh-ca-ha-ko* → *na-coh-cako* → *nacohcako*
 I-be.good-HORT-say-and → I-be.good-COMP → selfishly

The original structure of *nacohcako* is that of a hortative construction translatable as ‘say “Let it be good to me” and’ or ‘saying “Let it be good to me”’. It is to be noted that the first person pronoun *na* ‘I’ appears without a case marker, because the case markers are generally omissible in Korean. The missing case marker is the dative *-eykey* or *-hanthey*. Also to be noted is that the main predicate *coh-*, as used here, has the meaning of ‘be good to’ or ‘be pleasing to’. Therefore, the hortative sentence *nacohca* in the source construction has the meaning of ‘let it be good to me’ rather than ‘let me be good’. A similar lexicalization pattern is observed in the examples in (15).

- | | | |
|----------------------|--------------------|--|
| (15) <i>cwukcako</i> | ‘enthusiastically’ | ‘saying “Let’s die!”’ |
| <i>cwukcasalcako</i> | ‘obsessively’ | ‘saying “Let’s die, let’s live (together)!”’ |
| <i>ecceca</i> | ‘why’ | ‘saying “Let’s (do it) somehow!”’ |
| <i>naphyenbacako</i> | ‘selfishly’ | ‘saying “Let’s make me comfortable!”’ ⁸ |

4. SUBJECTIFICATION. In the examples of lexicalization, as illustrated in the preceding discussion, the most noteworthy aspect is that the speaker’s assessment of a situation is

⁸ The hortative marker *-ca* can be used either as involving the speaker and the addressee(s), i.e. speaker-inclusively, or as simply involving the addressee(s) only in a coaxing manner, i.e. speaker-exclusively. Therefore, the embedded sentence may either mean ‘Let’s make me feel comfortable.’ or ‘Let me be comfortable.’ (Cf. Hopper & Traugott 2003 for a discussion of a similar phenomenon with English hortative *let’s*.)

presented as if it were the sentential subject's utterance. This is again well illustrated by the examples in (16), where the lexicalized complementizer-constructions (marked by under-scoring) are analytically glossed and the translations are given analytically (= literally) and lexically.

- (16) a. *ku-nun sal-apo-keyss-ta-ko pamnac-ulo ilha-n-ta.*
 he-TOP live-TRL-FUT-DEC-and night.day-INST work-PRES-DEC
 (Lit.) 'He says "I will try to live," and works day and night.'
 'He works desperately day and night (to make a living).'
- b. *ku-nun cwuk-ela-ko aph-ulhyanghay talli-ess-ta.*
 he-TOP die-IMP-and front-towards run-PST-DEC
 (Lit.) 'He said "Die!" and ran forward.'
 'He ran forward with all his might.'
- c. *kulehkey na-phyenba-ca-ko kamaniss-cima-la.*
 that.way I-be.comfortable-HORT-and remain.quiet-PROH-IMP
 (Lit.) 'Don't say "Let me be comfortable" like that and remain quiet.'
 'Don't selfishly remain quiet like that.'
- d. *ku-nun a-l-ke-y-mwue-nya-ko caleka-ss-ta.*
 he-TOP know-PRES-NMN-NOM-what-INT-and go.to.bed-PST-DEC
 (Lit.) 'He said "What is it that I should know?" and went to sleep.'
 'He went to sleep nonchalantly.'

In (16)a, the speaker looks at a situation where 'he' works hard, and thinks that his enthusiasm in working is to the degree where he would say to himself 'I will try to live.' In the same manner, 'he' in (16)b runs so hard that the speaker imagines him saying to himself 'Die (in doing this)!'; and the selfishness and nonchalance that he displays in (16)c and (16)d warrants the speaker's imagination of his saying 'Let me be comfortable. (= Why bother?!)' and 'What is it that I should know? (= Why should I care?!)', respectively. All these situations can be characterized as those where the speaker is describing the situation through a borrowed mouth of the sentential subject, an extreme case of the speaker's subjectification.

5. DISCUSSION. The observations made in this paper may be recapitulated in the following terms: In Korean, complementizers were grammaticalized, perhaps with the necessity of linguistic representation of reported speech, and created a paradigm of complementizers. These complementizers became a part of word-groups by attaching to the end of the main predicate of the reported speech, due to the idiosyncrasy of this agglutinating head-final language. However, when these word-groups were subjected to being conceptualized as single unitized concepts, these word-groups obtained lexical status. These newly developed lexical items have highly subjectified meanings because the meanings were derived from the speaker's strategy of putting the characterization of the situation into the mouth of the sentential subject. This lexicalization phenomenon raises some interesting issues in grammaticalization and lexicalization, and further in the nature of grammar and lexis.

5.1. GRAMMATICALIZATION AND PARADIGMS. In grammaticalization of complementizers, it seems that it was not individual sentential endings that underwent a gradual grammaticalization, as a chance development; it is rather the paradigm of sentential endings that seems to have participated in the grammaticalization process. The absence of a considerable time lapse from the beginning to the end of the formation of the complementizer paradigm strongly suggests that the most frequent sentential ending, i.e., the declarative ending, spearheaded the process, with all others following suit.⁹ If this hypothesis is viable, it can be claimed that grammaticalization may bring forth not only individual grammatical forms but also a completely new grammatical paradigm within a short period due to functional and structural similarities.¹⁰

5.2. PERSPECTIVES AND LEXICALIZATION. In the preceding discussion it was shown that some instances of lexicalization include clausal arguments in the string. An interesting phenomenon with reference to these instances is that the personal pronoun in them tends to be the first person pronoun (i.e., *na*) as in *nacalnasstako* 'haughtily' (< 'saying "I am great."'), *naphyenhacako* 'for his/one's own comfort' (< 'saying "Let me be comfortable."'), *nayalpaa-nilako* 'nonchalantly' (< 'saying "It's not my business."'), *namollalako* 'indifferently' (< 'saying "I don't know."'), etc. This is the result of the fossilization of the reported speech, in which the imaginary speaker makes reference to himself/herself, usually as the sentential subject. The process involved in this may be said to be a direct projection of the speaker's subjective judgment on the state of affairs with the guise of the sentential subject's utterance.

More interestingly, many of these lexical items have counterparts in which the first person pronoun is replaced with the second person pronoun (*ne*). This means that the sentential subject of the reported utterance is raised into the main clause, and now is the argument of the main clause. Still more interestingly, many of these lexical items have the counterparts in which the first person pronoun is replaced with a special pronoun (*ce* < *caki*), which is the third person pronoun specifically used to refer to the person coreferential with the sentential subject, thus equivalent to 'the self', just like the second 'he' in the English example: *He_i thinks he_i is good.* Therefore, using *ce* in this context means that the reported speech was in the indirect quotation mode. In other words, the use of this pronoun is based on the speaker's perspective, not on the sentential subject's perspective. Therefore, the lexicalization process in these cases involves the pronominal argument used by the reporting speaker and the predicate of the imaginary sentential subject's verbatim utterance. It can be said, then, that the lexicalized words in these cases have mixed perspectives: those of the speaker and of the imaginary sentential subjects.

⁹ Granted that the proportion of sentence type occurrence significantly varies by the text genres, declaratives are by far the most frequently used sentence type. Some studies show that declaratives account for over 50 per cent of all sentence types (cf. Han 1998 for English).

¹⁰ See Hoffmann (2005) for a discussion of grammaticalization of English complex prepositions triggered by similarities with their counterparts in French.

5.3. GRAMMAR-LEXIS DISTINCTION. The final issue for discussion relates to the grammar-lexis distinction. All of these lexicalized forms originated from syntactic constructions. However, they are perceived, though to varying degrees, as lexical items. It is for this reason that the analyzability of some of these forms is controversial. Many forms that have been unverbated into consolidated units still have transparent, yet highly complex, syntactic structures. For instance, *taliyanalsalilako* '(run) with all one's might' still retains a transparent syntactic structure that may be translated as 'saying, "Legs, save my life!"'¹¹

As a matter of fact, many of the forms discussed in this paper may be modified with other elements such as manner adverbs or recovered arguments. For instance, *salapokeysstako* 'effortfully' (< 'saying "I will try to live."') has a variant form, *calsalapokeysstako* 'effortfully' (< 'saying "I will try to live well."'), and *weynttekinyako* 'gladly' (< 'saying "What kind of cake?"') has *ikeyweynttekinyako* 'gladly' (< 'saying "What kind of cake is this?"'). When these forms incorporate other sentential elements they are more susceptible to morpho-syntactic analysis since the complexity of the form may trigger the internal analysis, instead of the single-word perception. In these cases, the grammatical status of the multi-morphemic strings becomes even more unclear between a syntactic structure and a lexical item. This state of affairs supports the view that the distinction between grammar and lexis is by no means clear, and that the mental representation of linguistic forms may be based on connections due to semantic, phonological, and structural similarities, and reinforced by the frequency of use (cf. Bybee 1985, 2007; Barlow & Kemmer 2000).

6. CONCLUSION. This paper shows how subjectification affects linguistic representation of reported speech with particular emphasis on lexicalization. The lexicalization process involving the quotative complementizers was fundamentally enabled by the speaker's strategy of using the borrowed mouth, i.e., of describing the situation by means of pretended utterance of the sentential subject. There are several notable observations discussed in this paper. First, grammaticalization may be actuated by a structural analogy whereby members of an entire paradigm may follow the one member that leads the grammaticalization process, thus creating a whole new paradigm in a short period. Lexicalization may involve diverse perspectivizations of the speaker, according to which newly lexicalized forms may have multiple variants, notably with different pronouns and referring expressions. Furthermore, grammar and lexis may not be easily distinguishable when grammaticalizing forms deflect into lexicalization. This is particularly so when syntactic constructions become unverbated into unitized lexical items with conceptually single, yet structurally complex, constructions, even though the structural simplicity is more likely to yield a lexical-item analysis, whereas the structural complexity tends to yield a syntactic construction analysis.

¹¹ One of the reviewers comments that this expression is evidently the Korean equivalent of that old phrase often heard in Charlie Chan movies: *Feets, git me outa here!*

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BEYOND TRUTH

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THE CONCEPTS OF TRUTH AND REFERENCE are foundational to contemporary semantic theorizing (section 1). They are incoherent, however, as demonstrated by the age-old liar paradox (section 2). The paradox can be resolved, I suggest, but only by giving up contemporary semantic theorizing in favor of mentalist semantics (section 3).

1. TRUTH... When practicing linguists try to give the meaning of an expression, they usually resort to glosses or translations. This raises a theoretical question, however. By what criterion is a proposed gloss *correct*? Different answers are given by mentalist semantics, speech-act semantics, and denotational or truth-conditional semantics.¹ We can see this in the case where Σ (sigma) is a declarative sentence.

- TRUTH-CONDITIONAL SEMANTICS. For Σ to be correctly glossed by S, Σ and S must describe the same range of situations; in other words, Σ must be true under the same conditions as S; that is, we require that Σ be true iff (if and only if) S.
- MENTALIST SEMANTICS. For Σ to be correctly glossed by S, Σ and S must express the same thoughts; in other words, we require that a given cognitive agent A think Σ iff A thinks S.
- SPEECH-ACT SEMANTICS. For Σ to be correctly glossed by S, Σ and S must say the same thing; in other words, we require that a given speaker A asserts Σ iff A asserts S.

Note that truth-conditional, mentalist, and speech-act semantics need not necessarily be regarded as incompatible. Indeed, it is widely thought that cognitive content is constituted by truth-conditional content.

To make the discussion more concrete, why is German sentence (1) correctly glossed as (2)?

- (1) Der Schnee ist weiss.
- (2) Snow is white.

It is, supposedly, because they have the same truth-conditions (3), the same cognitive conditions (4), and the same speech-act conditions (5):

¹ On the relation between denotational semantics and truth-conditional semantics, see Saka (2007:20).

- (3) German sentence “Der Schnee ist weiss” is true iff snow is white.
- (4) German speaker A thinks “Der Schnee ist weiss” iff A thinks snow is white.
- (5) German speaker A says “Der Schnee ist weiss” iff A says that snow is white.

Analysis (3) illustrates truth-conditional semantics by means of a certain German sentence, but of course the theory is supposed to work for all languages. For example, we can state the truth-conditions of English sentence (6), and furthermore we can do it according to different versions of truth-conditional semantics: we can do it by means of componential analysis as in (7), by model-theoretic intensions as in (8), by simple disquotation as in (9), and so forth.

- (6) John is a bachelor.
- (7) “John is a bachelor” is true iff John is unmarried and John is male.
- (8) “John is a bachelor” is true in model M iff PRES (BACHELOR (JOHN)) in M.
- (9) “John is a bachelor” is true iff John is a bachelor.

In each case for (7)–(9), instead of quoting “John is a bachelor,” we could equally well use the label “(6).”

Truth-conditional semantics is orthodox in linguistics, as measured by its occupation of the key literature of the past twenty years. First, it appears to be endorsed by all the general textbooks that I am familiar with: Akmajian *et al.* (2001:235), Fromkin (2000:378), O’Grady *et al.* (2005:205), Ohio State University Department of Linguistics (1998). (To my knowledge, the only textbook exceptions are those that acknowledge they do not represent mainstream linguistics, e.g., Croft & Cruse 2004). Second, truth-conditional semantics is propagated by nearly every textbook in linguistic semantics that I am acquainted with: Allan (2001), Bach (1989), Cann (1993), Chierchia & McConnell-Ginet (2000), Cruse (1999), Frawley (1992), Heim & Kratzer (1997), Hurford (2007), Jaszczolt (2002), Kearns (2000), Lyons (1995), Portner (2005), Saeed (2003), and de Swart (1998). Finally, it is overwhelmingly represented by the only collections of canonical articles in linguistic semantics: Davis & Gillon (2004) and Portner & Partee (2002). Truth-conditional semantics is also orthodox in philosophy, as documented in Saka (2007:117).

My own position is that mentalist semantics and speech-act semantics both contribute to the correct theory of meaning, and that the former grounds the latter. More to the present point, I shall argue that truth-conditions do not at all explain meaning. They *cannot*, for truth-conditional semantics is contradicted by the liar paradox.

2. ...PARADOX... “I am now lying to you,” said Eubulides, some twenty-four hundred years ago. In effect, Eubulides made the following assertion.²

² The Eubulides statement differs from (L) in being more colloquial, and in other pragmatic ways as well. However, they are equivalent so far as the purposes of this paper go: everything that I say about (L) applies to the Eubulides statement, the only difference being that (L) formulations are less wordy and less vulnerable to deictic misconstrual. For example, speakers can use either the Eubulides statement or (L) for the sake of play, for the sake of pointing out a problem with the concept of truth, or to express a sincere belief. Priest (2006), for instance, thinks that the liar statement is both true and

(L) (L) is false.

Suppose (L) is true. Then you accept what it says, that it is false, and you contradict your own supposition. Suppose (L) is false. Then you accept the denial of (L), “(L) is not false,” and you contradict your own supposition. No matter what you suppose about (L), you contradict yourself.

Assertion (L), let’s be clear, is nothing like a simple contradiction:

(10) I am right-handed and I am not right-handed.

The problem is not that (L) is self-contradictory, the problem is that *describing* an assertion of (L) is self-contradictory—at least if what you want to describe is its truth-values and truth-conditions. Those linguists who want to describe truth-conditions contradict themselves.

The argument can be rendered as a formal, deductive proof:

- (a) “(L)” has been given as a label for the sentence “(L) is false.”
- (b) Σ is true iff S, where Σ denotes or labels S.
- (c) (L) is true iff (L) is false.
- (d) (L) is true and (L) is false.
- (e) Therefore line (b), also known as the T-schema (T), is false.

Line (a) is a fact about language. (One might quibble, claiming that “(L)” is an artificial code symbol rather than part of natural English, but if you feel this way you can change the example to a wordier and less precise formulation that works the same way.) Line (b) is a requirement of truth-conditional semantics. It is a highly theoretical principle that, when applied to fact (a), yields line (c) [let $\Sigma = \text{“(L)”}$, $S = \text{“(L) is false”}$]. Line (c) is already a contradiction, but its self-contradictory nature can be brought out more explicitly when (c) is converted, by propositional logic, into (d). The fact that we generate contradiction (d) from two premises—proposition (a) and disputed principle (b)—proves that at least one of the two premises is mistaken. But the soundness of premise (a) is either unimpeachable or at least beside the point (Saka 2007: ch. 8.2). Hence line (e): the T-schema is false.

Several responses to the liar paradox are available, but not one has won general acceptance.

TRUTH-VALUE GLUTS. Could it be that the liar statement is both true and false? Graham Priest (2006) and John Woods (2003) believe so, but if truth and falsehood ever merge into one, it becomes impossible to draw any cognitive distinctions whatsoever. Priest’s infamous proposal leads to intellectual collapse (Saka 2007: 225).

TRUTH-VALUE GAPS. One response to the liar paradox is to hold that the liar sentence (L) is neither true nor false on the grounds that it is meaningless or does not express a proposition

false. Because he thinks it is true (as well as false), he regularly asserts (L)—not in jest or confusion, but as an expression of what he believes.

(William of Ockham, Wittgenstein 1961, Bar-Hillel 1966, Kripke 1984, Rescher 2001, and Smith 2006). Consequently the left-hand side of (11) has a null truth-value, the right-hand side of (11) has a null truth-value, hence the two sides match, hence (11) is actually true:

(11) (L) is true iff (L) is false.

Yet (L) is clearly made up of English vocabulary according to English rules (if you prefer, consider the variant Eubulides statement). Moreover, “(L) is false” must be meaningful because “Graham Priest believes that (L) is false” is meaningful. Finally, the gap solution falls to the following variant of the liar:

(L') (L') is not true.

The gap solution holds that paradoxical statements, such as (L'), are neither true nor not true. This position can be recorded as (12), which entails (13):

(12) (L') is not true and (L') is not untrue.

(13) (L') is not true.

But (13) says exactly what (L') does, according to the standard view.³ The gap solution, therefore, asserts that which the gap theory regards as meaningless. The position is incoherent.

TRUTH AS AMBIGUOUS. According to another solution (Russell 1956, Tarski 1983, Quine 1950, Patterson 2006, standard logic textbooks), T-schema (T), strictly speaking, is false. It needs to be reformulated as follows:

(T_i) Σ is true_i iff S_j, where $i > j$.

The basic idea is that every use of language occurs at some logically regimented “level,” and that analyst-observers can distinguish among levels by using subscripts. If “snow is white” is truly asserted at one level, then the assertion “‘Snow is white’ is true” holds at a higher level. When this framework is applied to liar sentence (L), the result is that (L) is true at one level and false at a *different* level, thus avoiding formal contradiction.

(14) (L) is true_i iff (L) is false_j.

This approach may work for formal logic, but it does not serve the needs of natural-language semantics. First, although (14) avoids formal contradiction, it seems to remain self-contradictory in some deeper way. Second, discourse in natural language does not come in logically regimented layers. Third, natural languages do not have infinitely many predicates *true*, each pronounced the same and distinguished only by analysts external to the language.

³ The non-standard view will be considered below, under the heading “truth as indexical.”

(I do not deny that *true* may be polysemous, perhaps even indefinitely so. For example, the truth predicate may be used in various literal and figurative ways:

(15) Well, of course that allegory is not true... and yet it's *true*.

What I deny is that *true* is homonymous in the regimented, hierarchical manner required by the hierarchy solution.)

TRUTH AS INDEXICAL. A variant on the hierarchy solution adopts the same formula (T_i), but now the subscripts do not signal distinct predicates *true*. Now they signal different *uses* of the predicate *true*, or different instances of language more generally. The idea is that, just as different tokens of "I do" express different propositions depending on speaker and other context, so too do different tokens of the liar sentence express different propositions. This approach can be called *token-relativism*.

Let's start with a brand new token of a liar sentence, (M). Which token of "(M)" do I have in mind? In line (M), I mean to refer to the token of "(M)" that appears in line (M). Line (M) might thus be glossed as (M'):

(M) (M) is not true.

(M') (M_M) is not true.

Barwise and Etchemendy (1987), Gaifman (1992), Simmons (1993), Weir (2000), Goldstein (2001, 2007), and Gauker (2003), arguing that (M) is neither true nor false, are committed to the claim that (M) is not true. But in saying that (M) is not true, they do not mean what (M/M') does. Rather, their assertion (16) means (16'):

(16) (M) is not true.

(16') (M_M) is not true.

Lines (M) and (16) look identical, but the fact that (M) has been uttered by a paradox-monger whereas (16) has been uttered by a bystander makes them just as different as two tokens of "I do" spoken in distinct contexts.

Now what do we want to say about (M₁₆), the token produced by token-relativists at (16)? If Goldstein is right, we are committed to saying (17), i.e., (17'):

(17) (M) is true.

(17') (M₁₆) is true.

In short, some tokens of (M) are true, some are false, and some are neither. Tokens that refer to themselves are neither true nor false, tokens that refer to self-referring tokens are true, and tokens that refer to tokens that refer to self-referring tokens are false. This position is logically coherent.

Nonetheless, it is peculiar. The position is that line (16), and every token of the same type except for line (M), is true. *Why* is there this difference? Token-relativism, moreover, falls to the following liar:

(N) Every token of (N) is false.

Goldstein would want to say that (N_N) is neither true nor false (18), hence not true (19), from which it follows that some token of (N) is true (20), which means that (N_N) is false, which contradicts Goldstein's position (18).

(18) (N_N) is neither true nor false.

(19) "Every token of (N) is not true" is not true.

(20) Some token of (N) is true.

I conclude that available solutions to the liar, formulated in terms of truth-value, all fail. Consequently truth-conditional semantics is self-contradictory, and cannot be even part of a correct theory of meaning.

3. ...AND BEYOND. If truth and meaning are not understood in terms of truth-conditional semantics, how then are they to be understood? To answer this question, I propose that we turn to propositional attitudes. The resulting *attitudinal semantics* belongs to the same mentalist family as conceptual semantics (Jackendoff 1983), cognitive semantics (Fauconnier 1994, Talmy 2000), and natural metalanguage semantics (Wierzbicka 1996). These various forms of mentalism, though distinct from each other, are not necessarily incompatible.

I begin by rejecting the classical T-schema in favor of a psychologized version thereof:

(T_ψ) A believes that Σ is true iff A believes that S.

Instantiating the liar sentence yields:

(21) A believes that (L) is true iff A believes that (L) is false.

If A thinks (21) is true then A thinks (21) is false; and if A thinks (21) is false then A thinks (21) is true. Either way, A is highly irrational. But this is not at all paradoxical. There is a difference between being committed to an inconsistent reality, as truth-conditional semantics is, and reporting an inconsistent system of beliefs. First, inconsistent reality, by its very nature, cannot obtain, yet inconsistent beliefs are not only possible but common, even ubiquitous. Second, though A would be irrational in holding either "(21) is true" or "(21) is false," A can easily escape irrationality by not having any direct beliefs about (21)'s truth-value at all.

My solution to the liar paradox, then, is that in thinking about the liar sentence we should abstain from believing it is either true or false, which is different from believing that it is neither true nor false. Firm abstention in the face of the question "But what is it *really*?"

is appropriate because truth is not correctly characterized by the objectivist T-schema, it is correctly characterized by (T_{ψ}).

I've argued that the classical conception of truth is inconsistent. This does not mean that everyday exchanges such as the following are illegitimate.

- (22) A: Employers systematically discriminate against short people.
 B: That's so true!

It is not the truth predicate that is unacceptable. Rather, it is the classical *theory* of truth that is in error, in particular the T-schema.

Orthodox linguists may concede that the T-schema, and truth-conditional semantics, fail to apply to liar sentences, yet insist that the T-schema, and truth-conditional semantics, account for all other sentences. This ad hoc position can be compared to that of a physicist who concedes that Newton's laws of motion fail to apply to astronomically large objects moving near the speed of light, yet insists that they account for the movements of mundane objects. While it is true that Newton's laws serve as a practical and approximate description of everyday motion, they simply do not articulate the underlying universal principles that explain all motion. By the same token, truth-conditional semantics may serve for some practical and rough descriptive purposes, but it is not necessary insofar as proof-theoretic approaches may suffice. More important, truth-conditional semantics does not *explain* meaning, and adopting its principles can lead to serious misunderstanding, for instance regarding the nature of linguistic ambiguity (Saka 2007: ch. 6).

Other problems for truth-conditional semantics can be raised, and have been—for instance, the problems of learnability (Duffley 2007), mood, intensionality, vagueness, polysemy, metaphor, and historical change.⁴ The problem of mood has fueled one alternative to truth-conditional semantics, speech-act theory (Barker 2004, Vanderveken 1990), while the problems of polysemy and historical change have fueled another, cognitive semantics (Geeraerts 1997, Sweetser 1990). I think that the problem of the liar, however, stands out from the others. First, the liar paradox is *ancient*. Scholars have been hard at work on it for thousands of years, and still no generally acceptable solution is on the horizon. In contrast, the other topics mentioned—regarded as problems for truth-conditional semantics, not as phenomena in their own right—go back less than a century. Second, the liar paradox *deductively refutes* truth-conditional semantics. In contrast, consider the case of metaphor. The standard truth-conditional semantics response to metaphor—to distinguish between literal

⁴ Interrogatives and imperative meaning can be correlated with the mental states of wondering and wanting, but not with ways the world truly is; therefore mood seems to be a special problem for truth-conditional semantics, but not for mentalist semantics. Sentence meaning is vague, or fuzzy and uncertain; human thinking is vague; objective states of affairs are not vague; therefore associating meaning with states of affairs seems to be a special problem for truth-conditional semantics, but associating it with mental states does not. Regarding learnability: meaning is finite, because it can be learned; ideas are finite, for they fit inside the mind; truth-conditions are infinite; therefore learnability seems to be a special problem for truth-conditional semantics, but not for mentalist semantics.

meaning and non-literal meaning, and to make the study of non-literal meaning someone else's problem—is debatable, but it is not logically self-contradictory. Third, the problems mentioned above are often acknowledged in the linguistics literature. The liar paradox, however, is well nigh *invisible*. Despite the fact that all logicians know it very well, it does not make it into any of the key literature cited above (section 1, penultimate paragraph).

It is unlikely for any expert semanticist in either linguistics or philosophy not to have heard of the liar paradox, and not to know that it seems to prove that the theory of truth is illegitimate; most use the theory of truth in the foundations of their research, and yet practically none at all even acknowledge the inconsistency of their position. It is nothing less than scandalous. It also proves, in case an object lesson were needed, that research programs do not rise and fall according to intellectual merit alone. When a theory is logically refutable, and everyone knows it, yet the theory enjoys orthodoxy nonetheless, then obviously non-rational forces are at work, be they sociological or psychological.

To summarize, (T) is vulnerable to contradiction, and therefore truth-conditional semantics, even if it be approximately correct in limited application, is technically untenable. As an alternative to (T), I propose (T_ψ), an instance of mentalist semantics. By containing explicit references to speaker/hearer agents ("A"), cognitive analyses serve as a bridge from linguistic theory to psychology, sociology, history, and biology. If I am right, the object of linguistic analysis is not a sentence or the truth of a sentence. It is an instance of thinking of a sentence, whether that be conjuring a sentence up from imagination, constructing an interpretation for someone else's sentence, believing a sentence to be true, or entertaining or mentally manipulating a sentence in any other way.⁵

⁵ I would like to thank Toby Griffen, Sydney Lamb, Justin Leiber, and anonymous reviewers for useful comments.

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NORMS, GRAMMAR, OR A BIT OF STYLE: LINGUA FRANCA AND THE ISSUE OF LANGUAGENESS

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“Variationist” studies... have started from the supposition that there are languages in the use of which members of a community vary. The languages themselves have been objects of theoretical and descriptive study, as has variation in their use. But “languages” and “groups” have been taken as given, the starting points.” (LePage & Tabouret-Keller 1985:1)

Language is our Rubicon, and no brute will dare to cross it. (Müller 1862: 354, cited in Sutcliffe 2008)

THIS PAPER ADDRESSES LAST YEAR’S LACUS CONFERENCE THEME ON *VARIATION*, but strongly resonates with the 2007 theme of “Speech and Beyond,” and the here-recurrent question of *what it means to be a language*. The starting point of my exploration into both themes is a presumed negative correlation between variation and what will here be termed *languagelessness*. I sketch a gradient of languagelessness that pertains to various types of contact languages. The question is when such a contact language should count as a language, rather than as interlanguage, broken code, or some other form of sub-language collection of individual attempts at communication that are too varied to be assigned to a system. It is, indeed, the search for the Rubicon, this time within the realm of human communication.¹ The background to this line of questioning is ongoing investigation of the Lingua Franca of the Mediterranean: the Lingua Franca is situated at that peculiar point on the scale—that of pidgins—where it becomes difficult to draw a clear line between language and pre-language. From the contact language literature, I isolate some factors that are frequently assumed to accompany various types of contact languages, and discuss how variation on the one hand, and concepts such as norms, grammar and style contribute to our definition of languagelessness. I conclude that languagelessness, even in the restricted context of contact language creation, remains difficult to ascertain (with structural or functional measures) independently of social measures.

1. LANGUAGE CONTACT AS LANGUAGE CREATION. Where people speaking different languages come into contact with each other; where their native, bona fide full-fledged

¹ I owe Müller’s citation and framing of this paper with the Rubicon metaphor to Patricia Sutcliffe’s excellent LACUS presentation, published in this volume. I here transpose the distinction between human and non-human production to the boundaries existing within human speech production. Bickerton (2000:24, cited in Sutcliffe 2008) has already applied this citation to the human realm: “Syntax thus becomes, in words reminiscent of Müller’s, ‘the real rubicon’”

languages will not adequately serve them anymore for an extended period of time; in a context where language is there, but multiply so, and people create a new code for communicating: starting at what point can we refer to this code as a language? What requirements must such communication fulfill to be considered a language? We do not have a good definition of what a language is, nor when utterances of a makeshift jargon become (perceived as part of) one. We also understand very little of what it is that holds these younger languages together, and have not reached a clear view of what specific characteristics are prerequisites for languageness.

We do, however, generally assume a 'developmental hierarchy' for young contact languages. This field-wide consensus is most clearly spelt out by Mühlhäusler (1997:6): **Jargon > incipient pidgin > expanded pidgin > creole**. Here, I do not focus on the justification of the idealized categories, nor on the evolutionary bias itself. The problem of terminology is well known to creolists.² I will accept these idealizations for a moment as a given, and just slightly adapt the hierarchy above by merging the pidgin class into a single one, and adding a final stage, that of 'normal language'.³ Other than the notion of decreased variation, an obviously insufficient and also problematic assumption, how can we operationalize or motivate our already highly simplified labels? In absence of evidence for a sudden creation of a grammar⁴, and therefore assuming gradual development, the incremental rise of languageness is considered. By inserting possible heuristic measures that would characterize each new level reached—i.e., each discretely labeled stage of languageness—I hope to generate at least a very simple and rudimentary implicational scale of languageness. My aim is therefore neither to show the trajectory of one specific language, nor to do justice to all the different cultural shapes a language can have. Rather, I wish to briefly inspect what motivates our use and understanding of these specific labels that apply to formations of contact languages.

1.1. VARIATION. Variation, though present in any language, is often relegated to the margins of language, which is seen as a basically stable, even pristine entity when at its best. Pidgins

² Mufwene has criticized the very idea of a creole because the concept is solely sociohistorically defined (Mufwene 1986). The fundamental problem of P/C terminology and the no less fundamental issues surrounding it are thoroughly scrutinized by Jourdan 1991, who shows the categories to be blurred from the start. She asks, "[I]s not language a social phenomenon prior to being a linguistic one?" (Jourdan 1991:189) The present survey has but little to add to her brilliant paper, nor to other more recent publications broaching the topic (cf. Ansaldo, Matthews and Lim (2007)).

³ I purposely employ this term in order to allude critically to continued preconceptions of a type of language that is quite automatically allotted legitimacy and prestige; one with a long, written history and literature, standardized in grammar and spelling, according to rules imposed oftentimes by national institutions (see section 3); and one in stark contrast to contact varieties.

⁴ The existent 'Language Bioprogram Hypothesis' (Bickerton 1984) to this effect (LBH), where children put to use their inborn Language Bioprogram and therewith create creole output from pidgin input, has failed to stand up to the test of evidence. The LBH has been generally rejected by the field of pidgin and creole studies (see Siegel 2007 for a summary).

and creoles (P/C), however, constantly challenge the otherwise more convenient myth of language as a monolithic entity. Variation in pidgins and creoles is pervasive, often unpredictable, and cannot be easily done away with by sociolinguistic distributions into gender, age, class or region—*precisely because these societies are often characterized by flux*. While creoles, despite these difficulties and despite their frequent lack of standardization, are fortunately no longer denied language status at least by the profession, the matter of language-ness is much more open in the case of pidgins, and their jargon predecessors. Often, they appear as a collection of speech acts so varied and so loosely held together that they entirely eschew description. This problem of dealing with variation in a young contact language certainly applies to the Lingua Franca of the Mediterranean (LF), with which I deal below.

1.2. LINGUA FRANCA OF THE MEDITERRANEAN. LF is the famous, near-mythical, oral code reported to have been spoken across the Mediterranean, from at least the late Middle Ages up until early nineteenth century. Trade between Arabs, Christians, Jews, all meeting in this arena, was purportedly typically carried out in this simplified code. Its vocabulary is largely Romance derived.

This code was so highly variable in nature that it calls into question the unity of the LF language system, although *the* LF as an instance of *lingua franca* communication in the wider Mediterranean area (see Kahane & Kahane 1976 for an overview of the story of the term) is clearly documented. LF enjoyed a successful reputation of serving the communicative needs of Mediterranean people for over half a millennium. This contrasts with the lack of evidence for a stable grammar, indeed, with indications that speakers did not rely on stability in their code.

Despite the fact that LF is well-known as the earliest European pidgin, the available linguistic evidence has been under analyzed. A corpus composed of songs, theatre pieces, and reports, often novel-like, of travel and captivity, as well as more academically oriented general descriptions of the Barbary Coast (a main locus of Christian slavery, where LF was employed), has been developed since Schuchardt 1909. The sources have been published near comprehensively by do Couto 2002 and by Cifoletti 2004; the reader is referred to these collections for reference to that data.

The best LF source is also the last one, and comes as a dictionary set up in a “Teach yourself LF” format, designed to ease French invasion and conquest of Algiers. To let the Preface of the *Dictionnaire de la langue franque ou petit mauresque suivi de quelques dialogues familiers et d’un vocabulaire des mots arabes les plus usuels à l’usage des Français en Afrique* (published anonymously in Marseille 1830) sum up:

La langue franque ou petit mauresque, très-répandue dans les états Barbaresques, lorsque les corsaires de Tunis et d’Alger rapportaient de leurs courses un grand nombre d’esclaves Chrétiens, est encore employée par les habitants des villes maritimes, dans leurs rapports avec les Européens. **Cet idiome, qui ne sert guère qu’aux usages familiers de la vie, et aux rapports commerciaux les moins compliqués, n’a ni orthographe, ni règles grammaticales bien établies;** il diffère même sur plusieurs points, suivant les villes où il est parlé, et le petit mauresque en

usage à Tunis, n'est pas tout-à-fait le même que celui qu'on emploie à Alger; tirant beaucoup de l'italien dans la première de ces régences, il se rapproche au contraire de l'espagnol dans celle d'Alger. (6)

Several pages later, the introduction continues: "Pour familiariser le lecteur avec cet idiome, que l'on n'ose appeler une langue ..." (*Dictionnaire* 1830:9). If even the authors of the sole dictionary and explicit description of the language had to muster up courage to refer to LF as a language, how then are we to establish, on the basis of these few and variable data, whether LF really was a language deserving of the name? I return to the problem after examining some of the data on LF.

2. VARIATIONS OF LINGUA FRANCA. The nature of the linguistic data available for LF seriously limits the extent of any rigorous analysis.⁵ Despite the limits of the available LF corpus, given the legendary status of the language, it is no longer viable to ignore this data completely. I shall examine key aspects of the available data below. After all, historical linguistics is (as dubbed by Labov, *pc*) 'the art of making good use of bad data'.

2.1. THE GRAMMAR. Different sources of LF mark grammatical relations in different ways. Often, a periphrastic strategy is found in one source (often the *Dictionnaire*), but a morphologically bound strategy in another. This is true of possessive marking, expressed periphrastically with *di*, or with a pronominal clitic as in the anonymously authored *Contrasto della Zerbitana* of 1300 (do Couto 2002).⁶

- (1) a. Casama – 'my house' (*Zerbitana* 1300, cf. do Couto 2002:42)
- b. Commé star il fratello **di** ti? – 'How is your brother?' (*Dictionnaire* 1830:94)

Similarly, object marking can be expressed with a multifunctional preposition *per*, phonologically adjusted to *bel* in the speech of Giancarli's *Zingana*. However, it can also be expressed with a pronominal clitic, again observed in the *Zerbitana*.

- (2) a. Si per li capelli prendoto...
 'If I took you by the hair...' (*Zerbitana* 1300, cf. do Couto 2002:42)
- (2) b. Enti domanda **bel** mi gran cosa.
 'You ask a great deal of me.' (Giancarli 1545: *Zingana*, act II, scene 12)

⁵ While the linguistic data available for LF is scant and scattered, and does not lend itself to the quantificational methods of sociolinguistics, strong sociolinguistic evidence *is* available for LF as it was spoken by the Christian hostages in the slave colonies of North Africa. For discussion on how basic social and historical facts may have influenced speakers' linguistic behaviour, see Selbach (2008). On the willingness to let intriguing myths carry on through time regardless of data, see Selbach (2007).

⁶ Doubts about the *Zerbitana* being a good LF source are expressed in Operstein (1998). Haedo on the other hand is generally considered a very reliable and valuable LF source. I shall not take into consideration here the question of what is a good vs. a bad LF source.

- c. Mi star contento mirar **per** ti
 'I am glad to see you.' (Dictionnaire 1830:93)

True to its periphrastic preference, the *Dictionnaire* states that there is no plural marking; this is exemplified as indicated in (3)b. Thus, while the default plural is described as being unmarked, some sources add *-s* for plural number (e.g., Encina in (3)a). Noun-adjective and adverb-adjective agreement is also marked occasionally ((4)a and b).⁷

- (3) a. dar ovos 'give eggs' (Encina 1520, cf. do Couto 2002:48)
 b. l'amigo 'friends' (transl. *Dictionnaire* 1830:7 as 'les amis')
 (4) a. bona bastonada 'a good beating' (Haedo 1612, cf. do Couto 2002:60)
 b. Star mouchou bonou. 'That is very good.' (*Dictionnaire* 1830:94)

One of the most salient features of LF is the infinitival-derived verb (cf. Schuchardt 1909:445), which ends in Vowel+*-r*, and remains uninflected for person. Irrealis is marked periphrastically with preposed *bisogno* (*Dictionnaire* 1830:8). Past tense may be marked by a participle-derived form ending in *-ato*, without the need for auxiliaries (Schuchardt:445).

Yet, variation exists within Haedo 1612. The past tense in Haedo is formed both with, and without the auxiliary *ha* (5)a. Imperatives also are not as uniform as expected, ending, again within the same source, either in *-a* or in the expected *-ar* ((5)b) (examples taken from do Couto 2002:60).

The question remains open whether this type of variation within close proximity in the same author should not be interpreted as a stylistic tool. It is difficult to judge whether we have free variation or style here. The alternation of different forms within one source indicates at least that variability in LF is more than the mixing of L1 influenced idiolects. However, we do not have sufficiently lengthy LF texts to reach a final verdict on the status of these variables.

- (5) a. Qui **portato** de campaña? Gran vellaco estar, qui **ha portato**.
 'Who brought it from the country? The great beast is (the one) who brought it.'
 b. **Anda** presto **piglia**, **porta** fora guarda diablo, **portar** a la campana.
 'Go quickly, take and carry it away from the watch of the devil, take it to the country.'

A final component mentioned here is the paradigm of personal pronouns. The *Dictionnaire* (8) shows forms resembling Italian pronouns; the entire system can be quite neatly derived from (identical subject and object) forms of the Genoan Ligurian dialect (van Rijsingen 2004:71). However, in other sources (Rehbinder 1798 in Cifoletti 2004:225, 226; Giancarli 1545; Thierry-Mieg 1861:105, 109), variant forms intervene in the system: Iberically guided 1st and 2nd plurals *nous autros*, *vos autros*, and also Arabic derived *enti*, *enta* for 2nd person singular (see **Figure 1**). I discuss other doublets—the lexical options of LF—in section 2.2.

⁷ See Arends and Muusse (2002) for a detailed analysis of LF as a pidgin with a wealth of inflectional morphology. In contrast, I would argue that the occasional lack of the documented inflectional marking renders it optional, and therefore not part of a stable grammar of LF's own.

Person	<i>Dictionnaire</i> (1830)	Rehbinder (1798)	Giancarli (1545)	Thierry-Mieg (1861)
1 sing.	mi			
2 sing.	ti		enti	enta
3 sing.	ellou, ella			
1 plur.	noi	nous autros		
2 plur.	voi	vos autros		
3 plur.	elli			

Table 1. *LF personal pronoun paradigm.*

2.2 THE LEXICON. The lexicon of LF is extremely variable; more than one lexeme corresponds to one concept within and across sources. Apart from some key emblematic terms⁸, the lexicon appears to have remained quite open throughout the several centuries of its existence. Lexical variation is attested within a fixed idiomatic shell in (6), illustrating the room there was for lexical maneuvering within given structural limits. *Gandouf* and *buba* are interchangeable terms—lexical doublets for LF, synonyms if they were part of the same tight-knit system—denoting ‘plague’.

- (6) a. Saint Jean venir, **Gandouf** andar. (Poiret 1785 in Cifoletti 2004:221)
b. Saint Jean venir, **buba** andar. (Rehbinder 1798 in Cifoletti 2004:227)
‘Come St. John’s (i.e., by June 23rd), the plague will go away.’

Other doublets include:

- ‘to speak’: *parlar - hablar - ablar*
- ‘to have’: *tenir - tener - avir - aver*
- ‘to give’: *dar - donar*
- ‘to do’: *counchar - counchiar - contehar - fasir - fazer - fazir*
- ‘head’: *testa - cabeza - cabessa*
- ‘dog’: *cane - perro*
- ‘god’: *dio - dios*
- ‘good’: *bon - bonou - bono - bona - bouona - bounou - bueno - buon - taybo*
- ‘prison’: *bagnos - bagnes - baños*
- ‘house’: *cazeria - casseries - cachareas*

Some of these alternations could be explained as purely phonological, as different pronunciations all in circulation in the city of Algiers. Others clearly show derivations from different source languages were permitted to enter into the language concept of LF.

⁸ Schuchardt (1909:445), for instance, refers to the omnipresent “Hauptlieblingswort” *bono* (‘good’). Also recurrent and unchanging are several idiomatic expressions.

We cannot assume LF had a core system upon which variations played; it was variable at heart. Nevertheless, LF served as a useful and long-lived strategy for communication. Effective communication with a variable code contrasts with usual conceptualizations of languageness. This juxtaposition illustrates the fact that the idea of language is still quite ill-defined, even in one relatively delimited set of contexts, spoken language contact. Yet, so much appears to hinge on our idea of a language. Where is our Contact Language Rubicon?

3. A SCALE OF LANGUAGESS. I now examine the Languageness Scale. On the bottom of this scale are placed the least, lowest forms of verbal communication and expression: the jargons. The middle ground is taken up by what is often termed P/C, that is both pidgins and creoles, which are notoriously difficult to keep apart (cf. Jourdan 1991). On top sit the fully fledged, normal languages. These are always comparatively old, and typically, when talking about this type of hierarchy, equated with national languages. This also means they satisfy the oft-quoted definition of language, attributed to Weinreich in our days: "A language is a dialect with an army and a navy," and correspond to the view expressed by Nebrija 1992 [1492] in the first written grammar of Spanish: "Language is the companion of Empire."

What exactly holds the younger languages together is less clear. However, from the P/C literature there emerge some broad assumptions about their evolution into full-fledged languages. In this process, there are, on the one hand, expectations of decreasing variability along the languageness scale, presumably as languages tend, or are tended by their governments and institutions, towards standardization. On the other hand, these codes on their way to increased languageness are assumed to concomitantly develop other qualities, among them one best summed up as a quasi-poetic capacity. Fully fledged languages finally reach a maximum of expressiveness, uniformity and prestige. Several developments are non-controversial parts of the definitions: It will be taken for granted that jargons do indeed have the weakest norms, and that full-fledged languages have the most historical depth or cultural enshrining. These will be inserted into the scale at either end: new norms as the first hurdle towards the attainment of greater languageness, and historical depth as the final element for undisputed languageness.⁹

More difficult is discerning what happens in the mid-range of the scale, that is, in drawing a line between pidgins and creoles (Jourdan 1991). Differentiating the two has become especially difficult since Bickerton's Language Bioprogram Hypothesis, which offered (the spontaneous creation of) grammar as a heuristic, has become defunct (as noted above, for a state-of-the-art summary on arguments against the Bioprogram see Siegel 2007). However, there exists one precise claim that I would like to pursue further here: it has been suggested that pidgins differ from creoles (and full-fledged languages) in that they lack the possibility of stylistic refinement (Labov 1990 (1971)) or expressive force (Bakker 2003).¹⁰ In exploring

⁹ For enlightening discussions of the topic see Jourdan 2008 and Enfield 2005.

¹⁰ Labov (1990[1971]:45) states: "It would be more accurate to say that grammar is style." This suggests to me the following extension: As grammar is replaced by style (Labov 1990), nativization is replaced with community (Jourdan 1985).

the notion of style I thus examine specifically the Pidgin > Creole nexus: the stage where something is most expected to happen, and where we most expect to find a Rubicon.

The insights alluded to or explicitly addressed in the literature (norms, style, historical depth) yield a hypothetical scale of languageness as shown below.

jargon > (+ **norms**) > pidgin > (+ **style**) > creole > (+ **historical depth**) > normal language

3.1 DEFINING PIDGINS. Bakker (2003:4-5) provides the most recent and thorough definition of pidgins. They are described as (not) being five things: (1) not mother tongues; (2) always second languages; (3) endowed with norms; (4) not general languages of a speech community. The fifth is relevant here, and I cite it in full:

[P]idgins rarely if ever fulfill an *expressive function*, for example in verbal art or oral or written creative expression. An exception here would be Chinook Jargon, which was used for songs. The communicative function is the only important function of pidgins. Pidgins are used to get a message across and not for purely esthetical reasons. (Bakker 2003:4-5).

In a similar though much earlier vein, Labov, in a 1990 article (from a 1971 manuscript), "On the adequacy of natural languages," postulates that "pidgins are deficient in most of the basic grammatical categories and syntactic operations typical of more developed languages" (Labov 1990[1971]:16). He hence concludes that pidgins are logically, but not stylistically, adequate.

These two stipulations about pidgins have in common the underlying assumption that at the basis of communication is a logical message, and that expressiveness (as esthetics or style) is a decorative measure that sets in at a later developmental stage. It is only at this later esthetic apotheosis that languages produce Cervantes, Shakespeare, and Goethe—and also James Joyce. Literature flourishes, as if in celebration of the cultural achievements of standardization. The taming of the beast of variation, which is henceforth indexable (i.e., as style), appears to have reached successful conclusion in the normal language.¹¹

Concomitant with an increase in style, expression, and prestige, a decrease in variability is expected. Yet how do we distinguish variability such as is presumably found in Haedo (examples (5)a and b), from style? It cannot be done on purely linguistic terms. I suggest that the difference between style and variability has a lot to do with the social frame into which the language is embedded (3.2.); and that this social embedding is also the main defining factor of languageness (3.3., 4.).

3.2 DEFINING STYLE. Style studies are an expanding and exciting field of research in linguistics (see Eckert & Rickford 2001). In passing, I touch on two examples of definitions here, one oriented more on language and one more on the speaker.

While Labov (1990[1971]) focuses on the possibilities of style-shifting within a language system, where the chosen style mirrors the social context of the speech, Eckert (2001:123)

¹¹ Despite the present display of sarcasm, I acknowledge that the necessity of tensions between rules and their breaking is a topic for consideration, elsewhere.

is more speaker focused in her definition of style. She defines style as “a clustering of linguistic resources, and an association of that clustering with social meaning,” and discusses “the stylistic construction of a self” in terms that reach beyond language systems. Rickford and Eckert (2001:1) combine a language- and a speaker-oriented approach in their definition: “Style is the locus of the individual’s internalization of broader social distributions of variation.”

Using this latter definition, we can say LF had no style, as it could not index social distributions where no rigid social system for LF speakers existed—and L2 speakers are not expected to form a rigid sociolinguistic system together. Can style be construed as the turning point, the stage where grammatical obligations begin to exist (Labov 1990[1971])? It is a possibility worth pursuing as long as certain assumptions—namely those of *language* and *group* which LePage and Tabouret-Keller allude to in their opening quote—are adhered to. A turning point in the language system could accordingly only be found once the speaker community becomes delineated, and language and group become meaningful, overlapping terms.

Before this time of community identification, LF is at most a means of style within the multilingual context, as variations of LF may only carry indexes to outside of that looser community. This means that style (under Labov’s stricter definition)¹² can only arise when the community of speakers has gelled; i.e., when the language has become the main language of the community. The style measure then is also to some extent circular, as its definition depends on the social matrix that is indexed and indexable, rather than upon the linguistic variables themselves.

3.3 FROM PIDGIN VARIABILITY TO CREOLE STYLE? Below once again is the implicational scale of languagelessness. Underneath it, I have indicated another set of measures, growing from the individual to the culturally organized implementation of the speech act. These social context measures correlate well with the different stages of languagelessness.

jargon > (+ **norms**) > pidgin > (+ **style**) > creole > (+ **historical depth**) > normal language

Traditional (literary) requirement

Community (psychosocial) requirement

Perpetual (often economic) requirement

Incidental requirement

Social requirements are always invoked in defining a language. At the jargon stage, we have idiolects; produced by otherwise well-endowed speakers of languages. What is lacking is the community grammar. Along the scale, speakers progressively enter a shared social system together. The degree to which the observer can reach an abstract representation of a whole system increases accordingly. At the end point of the scale, the language has a history of Literature and Tradition, so no one can call into question its status as both fully

¹² However, if the system of multilingualism is recognized as potentially replacing the social system usually reserved for speakers of the same language (as in Labov’s model), thereby expanding the set of permissible elements at the disposal of speakers, then the definition of style can change: LF can then be seen as one of the (stylistic) registers available in Algiers.

fledged and normal language. Purely linguistic measures are harder to use as heuristics along this scale. Style, as a measure that combines social and linguistic factors, continues to be a potentially useful heuristic that certainly merits being pursued further than it so far has been in the language contact literature.

4. CONCLUSIONS. Returning to the European speakers of LF, we have seen that whatever tools were available to them, they employed: (1) simplificational strategies, either as L2 speakers, or for the benefit of L2 speakers (foreigner talk);¹³ (2) phonological streamlining; (3) direct use of their knowledge of Italian, Spanish, French, and other Romance dialects; (4) free borrowing of other terms also from non-Romance languages, especially from Turkish (e.g., *yoldach*) and Arabic (*taybo*, *marfuz*). That is, variation went hand in hand with the available means of expression. LF provided a liberal platform for the negotiation of meaning in absence of rigid sets or rules.

A question that arises is, can there really be any utterance that is purely communicative, or a way of speaking, even in a second language, that carries no affect, intention, persuasive element, goal, or motivation? It is hard to imagine normal human beings resorting to an exchange of nothing but logical code, of 'naked propositions'.¹⁴ LF was also used, or at least portrayed, in songs, theatre pieces and poetry, where rhyme and word play are heavily involved.¹⁵ Contentwise, LF as documented in Haedo's *Dialogues of Captivity* borders on the philosophical (see excellent discussion in Lang 1992). The pidgin LF was clearly used for expressive purposes. Is this not another counterexample besides Chinook Jargon to Bakker 2003?

Expressivity and style should be distinguished. This distinction is social. While expressivity would seem inalienable from language (contra the use by Bakker), style may still provide a heuristic for languageness, as suggested by Labov 1990. In other words, while poetry resides in the individual (authors in fact produce language, not vice versa), style is a socially indexed poetic expression. Absence of style, then, is not an individual but a social lack. Only after the gelling of a social system can variables possibly index what they are expected to: social factors, within that system. Along our scale of languageness, it is the unpredictability of variation that decreases, rather than variation itself. Concomitantly expanded is the capacity for stylistic expression: socially regulated means of expression increase.

Can LF qualify as a language, despite the variation displayed in the sources? First, no language is monolithic. Further, it is not trivial to stress that the people involved in such instances of language creation and development already speak a language (Jourdan 1985). From the speaker's point of view, LF may then be seen as part of an extended language repertory (cf. Enfield 2005): a subcomponent of the complete repertory which includes variation, style, and norms. LF did not have a grammar outside of the multilingual context it

¹³ These may eventually have lead to periphrastic constructions, more frequently attested in later sources.

¹⁴ A term introduced to me by Ingrid van Alphen, pc, with my thanks for discussion.

¹⁵ See Mühlhäusler (1997) for discussion of the sharp distinction between P/C expression and parody. It is difficult to tease these apart for the historically distant LF sources.

was embedded in. The question unfortunately, but tellingly, cannot, as I see it, be answered more rigorously.

Variation is inherent in humans and their languages, just as expression is. It remains an interesting challenge to show what quantitative and qualitative changes occur in either domain as languages mature along with their society. As languageness pertaining to a specific language is defined first by its socialness, not by purely linguistic factors, we have to be able to define our group before we can define our language.

In that sense, the Rubicon has eluded us again.

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TRANSLATION OF A WILD TALE

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MEANING IS CREATED.¹ And its creation relies on the construal of experience through a particular medium, be that a specific language, a visual representation, or some other symbolic system. Once meaning has been created, its recreation through another system necessarily demands that the translator make choices along a number of parameters. This paper examines the original creation of a wild tale by one of Bulgaria's most successful modern authors, Nikolai Haitov, in relation to the recreation of this tale into: 1) the English language by translator Michael Holman; and 2) a Bulgarian film directed by Edward Zahariev.²

1. HAITOV'S TALE. Nikolai Haitov (1919–2002) is a regional author whose stories not only portray the local color and ethnographic flavor of Bulgaria's Rhodope Mountains with its mixed Christian and Muslim population, but also examine deeper moral issues, permanent traits of the national character, and universal ethical values. His protagonists are heroic and strong, brave and independent, and care about truth, justice, and personal honor. Haitov, born in a village in the area where his stories are set, trained for and spent his early adult years as a forestry engineer. It was not until 1954 that he began to turn these experiences into literature. *Wild Tales*, 'Divi Razkazi' (1967) in Bulgarian, is his most successful collection; "When Men Were Men," "Măzki Vremena" in Bulgarian, is the first, and perhaps best known, tale in this collection. In 1977, Haitov merged this story with another one from *Wild Tales*, "Getting Wed" "Svatba," and wrote the script for Edward Zahariev's film also entitled *Măzki Vremena*.

In 1979, Michael Holman translated *Wild Tales* into English. Bulgarian literature is little known in the West, and *Wild Tales* is one of the few pieces of Bulgarian fiction available to an English-speaking audience.³ Published by Peter Owen, London, the book was favorably reviewed, including a review by Elizabeth Berridge in the *Daily Telegraph* (16 June

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² Haitov's work has been translated into other media as well: 1) theater (award-winning actor Marius Kurkinski's one-man show of three Haitov short stories; 2) music (by Krasimir Kyurkchiyski for the ballet *Kozijat Rog*, *The Goat's Horn*, a long short-story which was included in later editions of *Divi Razkazi*, *Wild Tales*; 3) dance (the same ballet); and 4) film (*Kozijat Rog*, a wildly popular film originally made in 1972 and more recently a less popular remake; other tales from *Divi Razkazi*).

³ See *The Oxford Guide to Literature in English Translation*, ed. Peter France (Oxford University Press), 2000, section on Bulgarian literature by Michael Holman (pp. 193–96).

1979) that states: "By use of homely language and the occasional regionalism, Mr. Holman has neatly closed the gap between cultures [Bulgarian and British]." In 1980, one of the co-authors of this paper saw a copy in a local public library in the north of England; the numerous dates stamped on it and the condition of the book indicated it had been borrowed over and over again.

"When Men Were Men" is the tale of the traditional Rhodope custom of bride stealing. The hero begins his story by stating: "I was a right daredevil in my young days. Bold as brass and blood on the boil" (Haitov 1979:19). This macho young man, lawless but honorable, is hired by a rather timid bridegroom to steal a "young lass" he has taken a fancy to. They bargain the price and the adventure begins. The lass turns out to be something of a Shakespearean Kate who has a mind of her own and definitely does not want to marry the "little slobberchops" who lusts after her. She is portrayed as tough and stubborn but "a fine piece of woman." Declares the narrator: "I've stolen a fair number of brides in my time, but never a woman like her!" (Haitov 1979:22) She tenaciously fights back, giving the central character/narrator and his two confederates a struggle to remember. This is not a timid woman but one who matches move for move the he-man tactics of the narrator. As might be expected, these two assertive individuals are attracted to each other. When brute force does not liberate her, the bride tries to negotiate with the central character by offering herself to him instead. Our hero hesitates but opts for honor, and after several more travails, delivers the bride to her groom. Not surprisingly, this forced marriage turns out badly. At the first opportunity, the bride escapes, the bridegroom is thankful to be rid of her, and the narrator negotiates to steal another bride, this one "meek and mild" (Haitov 1979:29).

2. *SKAZ* STYLE. An important organizing principle of Haitov's stories is that of a first person narrative in the *skaz* style (though Haitov himself was not versed in either *skaz* or literary theory).⁴ We owe the untranslatable term *skaz* to the Russian Formalists, notably Boris Eichenbaum, and to Mikhail Bakhtin, who use it in the sense of "stylization of oral every day narration" (Bakhtin 1981:262), "a technique or mode of narration that imitates the oral speech of an individualized narrator" (1984:8). This technique creates the illusion of everyday, oral speech through the choice of syntax, lexis, and phraseology that relies more on the ear than what the eye sees on the written page.

Coming out of the rich Russian tradition of folklore and folkloric studies, *skaz* moves the oral storytelling mode of the folk into the literary realm. In *skaz*, viewpoint is transferred from the author, the monologic, to the hero narrator. The voice of the author, however, never disappears completely. This aspect is what Bakhtin refers to as double-voiced discourse. Someone else's voice is infused with author intentions, resulting in irony, parody, or stylized *skaz*. Bakhtin asserts: "The hero's discourse is treated precisely as someone else's

⁴ But Haitov did study the work of other authors and noted in his diary about I.S. Turgenev's *A Sportsman's Sketches* that he [Turgenev] wrote about ordinary things using ordinary words, but that somewhere among the words there lurked the shadow of art (Zaharieva 1989:54–55). Haitov also noted in his diaries that once he decided to use first person narrative everything else clicked in place (Zaharieva 1989:58–59).

discourse, as discourse belonging to some specific characterological profile or type, that is, it is treated as an object of authorial understanding, and not from the point of view of its own referential intention" (Morris 1994:105).

This dialogic feature transmits not just 'the word' but a world view. And although Bakhtin repeatedly claims that linguistics is not adequate for explaining *skaz*, he seems to restrict 'linguistics' to attending to the sign while using the term 'metalinguistics' for exploring aspects of language that extend beyond syntax. Whatever the terminology, for Bakhtin, language and world-view are inextricable. He begins Chapter 5 of *Problems of Dostoevsky's Poetics* with this statement: "We have in mind 'discourse', that is, language in its concrete living totality [...]" (Morris 1994:103). Here Bakhtin is exploring the literary, the work of Dostoevsky, but Bakhtin extends the notion of double-voiced discourse to any semiotic form. Thus, while in a literary work one would examine language in the analysis of *skaz*, other semiotic features would be used in film or theater. Bakhtin insisted that context is absolutely essential to meaning, with the author a constituent element of the text. So, too, is the translator a vital element in the conveying of meaning, be s/he a literary translator, director, composer, choreographer, or performer.

Haitov employs *skaz* to create empathy with the people portrayed. By using the language and style of this rural population, Haitov's hero is able to narrate his own story, "refracting reality", in the words of Jeremy Hicks, "through the point of view of [...] a character-participant" (Hicks 2000:78). The author goes to great lengths to replicate the sound of the local Rhodope dialect so that we, as readers, have a sense of listening to a story told in a tavern or by the fire in the evening, among comrades, men like the narrator. Haitov speaks with his people for his people—even though the medium is written and literary. This illusion of improvisation, of being acted out, attempts to replicate an unrepeatable live event involving a speaker and a listener. In this sense, Haitov's tale is deictically grounded, not just in dialogue as might be any piece of literary work, but also in the narration itself. To this end Haitov infuses his work with colorful language throughout the text, employing the syntax and vocabulary of the people portrayed.

In his tale "Măzki Vremena," Haitov presents a strong, brave, and independent hero whose primary concern is the honor circumscribed by an entrenched patriarchal system. The narrator's voice is confident to the point of bravado. Haitov accomplishes this by ample use of Turkish loan-words, colloquial expressions, and earthy regionalisms.

3. HOLMAN'S ENGLISH TRANSLATION. Michael Holman's English translation preserves the global meanings and orients the text towards the new target audience and culture by choosing resources from English rather than translating literally from the Bulgarian. His rendering of the text is then less concerned with directly reproducing word order, clause structure, and figures of speech, and more concerned with telling the same essential tale in English. In an article on the translation of the Bulgarian author Yordan Yovkov, Holman contrasts his own philosophy with that of another English translator, John Burnip. He portrays Burnip's approach as "excessively author-oriented" and literal, resulting in "foreignness and occasional awkwardness of expression." By contrast Holman characterizes his own approach to translation this way: "I [am] more oriented towards the reader and

the receiving culture.” This frees Holman, he says, from the syntax and word order of the original and allows him to construe meaning by, in John Burnip’s critical words, “expansion, embroidery, and embellishment” (Holman 2003:145).

In a contribution to the centenary celebration of Bulgarian author Iliya Volen, Holman dissects the English translation (not his) of the sole Volen story to appear outside Bulgaria. He focuses on three areas where he feels the translation fell short: difficult words, colorful phrases, and rhythm and word flow. In his critique, we see clearly Holman’s own philosophy. Volen’s story “Groudka,” like “When Men Were Men,” depicts rural life and includes colloquial, everyday speech. In such a story, the translator needs to take great care in choosing English equivalents, ones that retain the flavor of the story. Holman points out that much of the sexual double entendre of “Groudka” is lost in translation. For example, the translator might have chosen ‘stripping’ the corn cob instead of the more technical ‘husking’ (Holman 2005:7). Holman points out other places where a literal rendering of a Bulgarian phrase takes the juice out of the dialogue. A Bulgarian phrase that has the sense of ‘kill’, for example, might have been worded in a more lively, earthy manner as ‘bump off’ (Holman 2005:7). Holman objects to the “dumbing down and smoothing out” of text (Holman 2005:8). He feels that the translator’s “version is conscientious and for the most part correct, but peasant fun and games in the hay-loft, seduction at the sheep pens, and night-time frolics on a bouncy bed of maize leaf strippings” are lost in translation.

Holman believes that it is important to first assess the overall meaning and feel of a text. He then makes conscious choices on how to transfer that meaning from Bulgarian into English. A particular problem for Holman in the translation of “When Men Were Men” was deciding how to render the dialectal speech of the narrator, which is direct, simple, and lacking cant. Choosing an idiolect that will communicate to the target audience the basic character of the narrator has its challenges, which Holman discusses in his introduction to *Wild Tales*. This narrator “draws on a rich store of colourful words and expressions so colloquial, dialectal or downright obscene they have not merited an entry in standard Bulgarian reference works” (Haitov 1979:15). In addition, speech is peppered with words of Turkish origin which by their nature import a “spicy, earthy” (Haitov 1979:15) feel for Bulgarian readers, much as French words add a certain cachet to English. Because it is these very folksy, nonstandard elements that convey the warmth and solidity of the characters, they are essential to meaning—and they are difficult to translate. Holman “ran the risk” (his phrase) of transforming the Bulgarian Rhodope peasants “into homegrown Yorkshire yokels” (Haitov 1979:16).

Holman’s approach to translation is apparent from the very beginning of Haitov’s tale. The Bulgarian title “Măzki Vremena” [‘manly times’] is rendered as “When Men Were Men,” shifting from the Bulgarian NP to the English minor clause. In doing so, he captures perfectly the flavor of the original: this is a story about a more macho time, before the age of feminism, when men ruled.

In the Volen centenary speech, Holman contends that “[s]tyle is a part of content. Get the style wrong and the content too is distorted” (Holman 2005:6). This means foregoing literal, word-for-word translation in favor of attention to the emotional highs and lows, the spirit of each character, and the right word within the context. In such a way, Holman frees

himself from any tyranny of syntax in order to expand, explain, and explore the essence of the original story. In the text proper, he recreates the *skaz* style by employing English syntactic devices not found in the original Bulgarian: copula, and often subject, deletion, phrasal verbs of a colloquial nature, and marked word order. To this Holman shows his own creative bent through careful—and colorful—lexical choice, original phraseology, and a staccato style formed through alliteration of bold sounds.

4. ANALYSIS AND COMPARISON OF WRITTEN TEXTS. Holman's first translation decision was to choose a nonstandard English dialect, one that would convey the macho, country feel of the original Rhodope Bulgarian vernacular. A close look at the first two paragraphs of the tale reveals some of the features Holman employs. The most prominent one is the use of bullet sentences, existential processes lacking copulas and sometimes subjects: "Bold as brass and blood on the boil." "Not big, just tough." "daggers in my belt" "a revolver here at my side." With this device—one not present in the original Bulgarian—Holman immediately establishes the swagger of the narrator. To this grammatical bullet effect, he adds a staccato alliteration in "bold as brass and blood on the boil." This very Anglo-Saxon alliteration is reinforced by the word 'daredevil'.

The Bulgarian original puts all of this in a single first sentence:⁵

- (1) *na onija mladite godini, bjax delikanlija, bujna krv.*
 in those young-the years be-p.1st.s wild[Tk] wild/hot blood
 'I was a right daredevil in my young days. Bold as brass and blood on the boil.'

Holman chooses to begin with an overt 'I', shifting the time phrase to the end. As Bulgarian is a null subject language, Haitov has the choice of eliminating the overt subject pronoun—and he does. Haitov's is a more traditional beginning for a tale, especially an oral, spoken narrative in the *skaz* style: establishing a time-frame. But Holman makes the decision to put the narrator in Thematic position; this leaves the time-frame for Rheme. Word choice presents a challenge for Holman. In the original, Haitov uses both the Turkish borrowing for 'wild', *delikanli*, and then repeats it in Bulgarian, *bujna krv*, perhaps because the Turkish loan-word (*ija* is the Bulgarian morphological adaptation of the Turkish *delinkanli*) is a word unknown to younger generations.⁶ Holman gives us instead two metaphors: 'bold as brass' and 'blood on the boil', as well as the evocative 'daredevil'.

⁵ Examples give the original Bulgarian text with English gloss below, followed by Holman's English translation. The Bulgarian Cyrillic of the original is transliterated into Latin script according to E. Scatton, *A Reference Grammar of Modern Bulgarian*, Slavica Publishers, Inc., Columbus, Ohio, 1984, with the exception of rendering *Ъ* [*er golyam*] with *ə* [the phonetic schwa symbol]. Gloss symbols include: p=past; pr=present; (?)=interrogative; imper=imperative; Turk.=Turkish borrowing; s=singular, pl=plural.

⁶ *A Turkish-Bulgarian Dictionary* (G. Klasov & S. Gavazof, *Türkçe-bulgarca sözlük*, Ambelino Art Publishers, Sofia, n.d.) translates *delikanli* as 'a young man, lad, bachelor'; *deli* means 'wild', *kan* is 'blood', and *-li* is an adjectival suffix.

Thus, we can clearly see, Holman's translation differs dramatically from the original in phrasing and lexis. The rhythm is probably slower in Bulgarian and more dynamic in English. The time adverbial in Bulgarian is not so obviously related to the speaker/main character and thus emphasizes the distance in time: "I am going to tell you something that happened a long time ago, once upon a time." The English is more personal.

While sentence (2) is another verbless sentence in English, omitting both the copula and the subject pronoun, the Bulgarian is a fully-formed clause, though one with colloquial overtones. The conjunction *ala* is a 'folksy' alternative for 'but' (instead of Bulgarian *no*); and Haitov uses the neuter adjectives *edr-o* and *jak-o* instead of the masculine *edar* and *jak*. The neuter is partly explained by the young age of the character in those days (*momče* 'boy' is neuter although there is no grammatically neuter word present) but it also expresses emotional involvement and greater intimacy.

- (2) *ne bjax edro, ala jako.*
 not be.1st.s big, but tough
 'Not big, just tough.'

Sentence (3) presents Holman with both word and punctuation choices. For the most part, Holman sticks to a fairly close translation, but there are a few places of note.

- (3) *Martinkata mi laeše na gərbinata, v pojasa*
 Martini.fem.the my was.barking.1st.s on back.the in sash.the
nož do nož. Dva li, tri li bjaxa, ne gi pomnja,
 knife next-to knife two (?) three (?) be.3rd.p not them remember.1st.s
a livorverat— ej tuka, na kalkata.
 and LevoRver.the right here on thigh.the

'A Martini-Henry barked from my shoulder, daggers in my belt—two and sometimes three—and a revolver here at my side.'

The Bulgarian *gərbinata* is a colloquial, expressive—and perhaps, augmentative—alternative to the neutral *grəb*. Holman places his Martini-Henry on the 'shoulder' instead of 'on back'. The phrase *nož do nož* is a colloquial syntactic pattern, with the repetition of the noun having the special effect of meaning 'plenty of them'. Holman translates *nož* as 'dagger', giving the word a menacing flavor; knives are legitimate, utilitarian objects while daggers are intended for nefarious deeds. Besides a Martini-Henry and a knife, the narrator mentions a third weapon: his revolver. Haitov renders this with the uneducated metathesis of the [l] and the [r]; Holman simply translates 'revolver'. Haitov locates the revolver on the thigh, using the colloquial, even slightly indecent, *kalka* to refer to this human body part. Holman uses the less intimate 'side', a choice devoid of any raciness, leading one to wonder why he did not, instead, use 'hip'.

The punctuation of the Bulgarian is complex: there are two sentences, each with a dash. The first sentence consists of two clauses separated by a comma. The second clause is verbless. The dash stands for the missing verb—an existential verbal expression—*imaše* ‘there was’ in this case. Intonationally the dash represents a pause. Both the verblessness and the pause are again features of colloquial syntax. This second clause starts with the thematic *v pojasa*, which takes up the Rheme of the previous clause *na garbinata* (both parts of the body/clothing), and the emphatic *nož do nož* is Rhematic. The second sentence consists of three clauses, but the first two are connected by subordination and they form a unit coordinated with the third clause. So in a way we have coordination of two syntactic units as in the first sentence and thus some parallelism. However, the two clauses in the first sentence are asyndetically coordinated (the comma/pause showing their boundary), while in the second sentence the two parts are linked by the conjunction *a* (‘and’ with a mild contrast implied). *Dva li, tri li bjaxa* [‘if/whether’ ‘they’ were ‘two or three’] is an object clause to *ne gi pomnja* ‘I don’t remember them’; *gi* repeats/doubles the missing ‘they/them’. In this object clause (an indirect question, hence the interrogative *li*) there is ellipsis of ‘knives’, which is in the previous clause *nož do nož*; there is an implied ‘they’ in *bjaxa*, of course. A comma separates the two alternatives of the question: ‘two or three?’ The last clause here is again verbless, with a missing existential verb, this time ‘was’, represented by a dash. Here Theme/Rheme are switched again to ‘weapon’/ ‘body part’. But the body part is first deictically indicated (the narrator may even be pointing to the place as he is telling the story) by *ej tuka* ‘right here’, which is then additionally specified by *na kalkata*. This specification is separated from the preceding deictic locative expression by a comma and a pause. It almost comes as an afterthought, but not quite; it is a more precise and specific attempt to indicate the place. All these commas and dashes have a syntactic function and intonationally correspond to longer or shorter pauses. The syntax is very natural and markedly colloquial.

Sentence (4) is another long sentence in Bulgarian, and Holman divides it into two sentences in English.

- (4) a. *Vsicki me znaexa če si ne popljuvam,*
 everyone me knew.p.3rd.pl that dat.reflex. not spit.pr.1st.s
 ‘Everyone knew me, and when I took anything on, there was no messing about.’

Haitov’s (4)a contains the colloquial idiom *ne si popljuvam*, which Haitov gives a further folksiness by inverting the clitics *ne* and *si*. *Si* is prosodically stressed when preceded by *ne*, the emphasis actually being on the negation, but in Haitov’s version there is also prominence on the lexical verb *popljuvam*, giving added emphasis to this idiom. One dictionary translates the idiom as “call a spade a spade; stand no nonsense” (Philipov 2003). These, especially the first, apply to verbal behavior which is decisive, but the meaning can refer to other types of decisive behavior that is carried out without delay. Another dictionary gives: “stick at nothing, stand no nonsense; handle without mittens/gloves” (Boyanova & Ilieva 2002). Folk etymology traces the origin of the idiom to “I don’t waste time spitting on my hands before getting down to starting the job.” Holman’s translation then, “there was no messing about,” is effective but more modest in not mentioning explicitly that “I” is the

decisive and efficient guy. The second half of sentence (4) has the literal translation: 'so that when someone was planning to steal himself a woman, they called me.'

- (4) b. *ta štom njakoj se nakaneše da si krade žena—*
 so that when someone refl. plan.p.3rd.s that dat.reflex. steal.pr.3rd.s woman
 vikaxa mene.
 call.p.3rd.pl me

'If a bride needed stealing, it was me they called in.'

The *ta* and *štom* are mildly colloquial adverbial conjunctions more suitable in an oral delivery, versus the more formal/neutral *taka će* and *kogato*. The same is more or less true of the lexical choice *nakanja se*. As there is no infinitive in Bulgarian, Haitov uses a *da*-finite clause. Holman does have a choice and his choice is an interesting one: instead of opting for an infinitive clause, he uses the vernacular *need*-passive. This puts 'bride' in thematic position and omits the actor entirely. The result is to put the emphasis on the narrator's role, de-emphasizing any decisions by a potential bridegroom. The spotlight here is on the narrator. Holman also makes the lexical choice of 'bride' instead of the more generic 'woman'. This may be a bid to his English-speaking audience who would not have a reference for bride-stealing. The final part of (4)b illustrates Holman's deft ability to render the colloquial flavor of the original. In the Bulgarian *vikaxa mene*, the 'me' is emphasized by giving it Rhematic prominence and using the full stressed form of the pronoun, not the weaker *me*. Holman makes the syntactic choice of a cleft sentence, playing on the nonstandard import of this phrasing.

The first part of sentence (5) would get the literal translation: 'getting married then did not occur with cajoling.' *Kandarma* is a recognizable Turkish borrowing but one that is known to every Bulgarian speaker. Holman takes an entirely different tack on this, using the quaint phrase 'cooings and wooings' with its assonant rhyming. This lends the English version a cuteness, one that is to be denied in those "manly times."

- (5) a. *ženeneto ne stavaše togava s kandarmi—*
 wedding-the not occur.p.3rd.s then with cajole.pl [Turk.]
 'No time for cooings and wooings'

The end of sentence (5) is a restatement of the title. Haitov plays this up by setting off the phrase *v onija mužki vremena* 'in those manly times' with a dash, a punctuation, however, that is far more common in Bulgarian than in English, representing a pause, in this case an afterthought. Still Holman decides to not make use of the dash; indeed, he uses no punctuation at all between the main clause and the phrase that contains the title. To "when men were men" Holman adds the prepositional phrase "in those far-off days," an addition that rounds out the English nicely.

- (5) b. *v onija mǎžki vremena.*
 in those manly times
 ‘in those far-off days when men were men.’

Haitov’s statement of sentence (6) is straightforward: “I had a neighbor.” Once again, this is very story-like, introducing the character of his neighbor. And here again, Haitov uses the Turkish borrowing *komšija* instead of the native Bulgarian *sased*; as with *kardarma*, this Turkish word has made its way into the general vocabulary of Bulgarian speakers. Holman brings a distinctly colloquial flavor to this statement, beginning with ‘this’ instead of the more standard indefinite article which he follows with the double genitive “of mine.” The resulting NP has a nonstandard feel.

- (6) *imax edin komšija,*
 have.p.1st.s one/a neighbor [Turk.]
 ‘This neighbour of mine’

While the Bulgarian divides the idea into two independent clauses, using what would be a comma splice in English (but not in Bulgarian) to separate the two clauses, Holman poses this as a single clause, one that assumes decoder knowledge, bringing an intimacy to the statement. To this Holman puts the verb in the nonstandard “had took,” followed by the noun phrase “a fancy” to form the expression ‘to take a fancy to’. By contrast, Haitov simply says ‘had liked’. And while Haitov again uses the generic *žena* ‘woman’, Holman makes the lexical choice of “young lass.” The total effect is that the English version is more familiar, more in line with orality.

- (7) *xaresal be v Nastan edna žena*
 had liked.3rd.s in Nastan one/a woman,
 ‘had took a fancy to a young lass in Nastan,’

In (8), the freer word order of Bulgarian allows Haitov to phrase the idea in a way that sounds very natural in oral conversation. This word order is not possible in English, so Holman must choose another way to construe this same notion. He does this with the colloquial “he called me round.”

- (8) *ta me vednaž izvika toj:*
 so me once call.p.3rd.s he
 ‘and one day he called me round.’

Sentence (8) is followed by dialogue, which Haitov sets off with a colon and Holman paragraphs after a full stop. In (9), *kazvaj* is the imperfective aspect verb in the imperative, which is a more urgent and impatient order/request, as well as more colloquial, compared with the perfective imperative *kaži*. *Da ja dokarame do* is a colloquial expression, with its choice of the verb, and especially the 3rd person singular accusative feminine pronoun *ja*,

possibly referring to an ellipted feminine *rabota* 'business'. Holman finds an opportunity to use the Turkish word *hodja* 'Muslim cleric', which is not in the original.

- (9) —*Kazvaj kakvo šte iskaš, za da ja dokarame do svatba!*
 say what will want.pr.2nd.s in order to it bring.pr.1st.p to wedding
 "What would be your price,' he asked, 'for bringing her to the *hodja*?"

Sentence (10) is the narrator's reply. The Bulgarian *vikam*, whose basic meaning is 'shout', is used here as a casual way of saying 'say'. This is the colloquial historical present tense, 'says'. Holman often uses 'I says' to achieve a similar effect, but in this first piece of dialogue he does not tag the narrator response. '*troitsa*' is a folksy, homely word for 'three people', the standard of which would be the stylistically neutral and colorless *trima*. Holman again eliminates the verb 'give me' and imparts the informal flavor of the original '*troitsa*' by the use of 'mates'. Holman's numbers are a little less specific: Haitov uses the actual numerals, while Holman writes out 'a hundred', 'a couple of hundred', and 'five hundred'. While Haitov says, "your wedding is ready," Holman renders this "she's yours."

- (10) a. *Daj— vikam— na troitsa po 100 leva, 200 leva otdelno za piene,*
 give-imper. say.pr.1st.s to three each 100 levs 200 levs separately for drink
 'A hundred levs each for me and my two mates, plus a couple of hundred extra for drink.'
 b. *ta vsičko 500 i svatbata ti e gotova*
 so altogether 500 and wedding.the your be.pr.3rd.s ready
 'Five hundred and she's yours.'

5. FILM. The film, directed by Edward Zahariev, also entitled *Možki Vremena* with a script written by Haitov himself, shifts to the nonverbal for the construal of experience; with little dialogue, there is a reliance on facial close-ups and long, sweeping panoramas of mountain vistas to create meaning. While the written tale, in both Bulgarian and English, is a first person narrative, ironically perhaps, the film does not attempt to impart the *skaz* style; it gives the viewer knowledge the narrator does not have, at times focusing on the inner thoughts of other characters, especially the stolen bride, whose animated face communicates vividly her inner turmoil, fear, and determination. Thus a different impression is made by the film translation of the story. This is due to several factors: 1) the transfer from the linguistic/literary to the visual/cinematic medium; 2) the decision of the author/script writer to combine two stories into one, involving changes in plot, character development, and the time span covered; 3) political factors; and 4) the choice of actors.

A look at the opening scene illustrates some of the cinematic and script decisions made. The film begins with a close-in shot of the main character shaving. We view him as from within the shaving mirror: his face is full of concentration and his dark eyes, fully dilated, gaze intently into the mirror/at the camera. One side of his face is in shadow. The sound track is silent, directing the attention of the viewer totally toward the visage of the hero. This is the face of a rugged man in mid-life but at the height of his virility, handsome and seasoned—not young and impulsive. After several prolonged minutes in this intimate focus,

the camera shifts to the two mates and the bridegroom making preparations to depart. Still inside a dark stable, we follow the hero as he struts up an inner staircase, striding two steps at a time. Within these first few minutes, the director projects an assertive, self-confident hero; by contrast the other three men are barely distinguishable figures moving about in the shadows, and only later are we able to sort out their roles.

Foreshadowing where the men are going, the camera pans to a window beyond which the surrounding mountains shine brightly, in sharp contrast to the barely visible gloom of the stable interior. The camera lingers briefly and then swings back to the hero's preparations: he cinches on a wide leather girdle; throws a knife into a thigh holster; fondles another knife strapped to his calf; picks up a large revolver, checks to see if it's loaded, and then stuffs it into his waist; gently unloops a fob watch that dangles from a nail; scoops a pile of coins from a shelf into his palm and pockets them. Finally he strides over to the wall, takes a coil of rope from a hook, and tosses it to a mate. We see each of these actions in close-up isolation. There is no story yet, only the fine details of setting the scene.

As the men climb a narrow dirt path out of the village and up into the mountains, the title and credits scroll and the sound track softly nudges its way into our consciousness, quiet piano tinkling and the sounds of nature: the clop of the mule's hooves; the thump of soft-leather shoes; the bark of a dog—but no voices. These are taciturn men. The hero commands respect with his mere presence—in contrast to the bravado voice of the narrator of the written tale. The voice in his head that is articulated in the written *skaz* style can only be intimated on screen by his expressive face and his body language.

Unlike the *skaz* tales, the film does not single-mindedly follow the hero. Almost immediately the quartet of men leave the village and begin their trek; the camera sweeps, in long lingering panoramic shots, across the peaks and valleys, settling on an isolated farm compound nestled at the base of a hill. The camera pauses and then slowly zooms in on the farmyard. We see a pretty, young woman doing chores. Suddenly the camera jerks to a young man out on the mountain whizzing through trees, dashing over rocks, leaping obstacles, and careening into the door of the farm compound. He bolts through the outer door, slams it shut and latches it. In a single stride he grabs the startled woman and yanks her inside the house. This is our first glimpse of the bride, and in that few seconds, she communicates both a vulnerability and a self-composed stubbornness. In contrast to the written stories, in the film the bride becomes a main character. The director allows her to present herself; thus we see the bride through her own expressions—and later her own extensive words—a person in her own right, not just a creation of the hero/narrator.

A major deviation in the film is the decision to combine two short stories: "When Men Were Men" and a quite different tale with a different narrator entitled "The Wedding." The merging of the two stories is not seamless, and when the film shifts to the latter tale, the storyline becomes muddled. For our purposes here, however, the effect of this merger is a hero who is more mature, both in years and in maturity of action, than the one in Haitov's original "*Mažki Vremena*," and he is most definitely not the swaggering braggart of Holman's "When Men Were Men." This more mature central character is less impulsive, more responsible—definitely no longer "a right daredevil." He is also more of a romantic. As the film progresses and the attempts of the bride to escape become more frantic, the

hero becomes increasingly sympathetic to, even concerned about, her plight, and in the end becomes her rescuer. In the penultimate scene before the film shifts to "The Wedding," the hero and the bride struggle across a raging stream where they are swept into the current. After the hero carries her safely to the opposite shore, the camera pans in on what is perhaps the longest of many long close-up sequences: the bride gazes with utter adoration, for a disquieting length of time, into the hero's eyes, strokes his cheek, and finally they kiss. This is not the raunchy lust of the written tales but pure, romantic worship. This bride is not trying to buy her way out of a bad deal; she is absolutely and utterly in love with the hero, whose actions are tender rather than lascivious.

Haitov wrote "When Men Were Men" in the 1960s. By the time the film was produced in 1977, the political climate had changed. Bulgarian policy on 'the national question' had been and continued to be inconsistent and not very successful. Though minorities had even been given minor privileges at times, the so-called *Vuzroditelen Protses* ('revival process' or 'renaissance') was an attempt to assimilate the Turkish, and other, minorities into a single Bulgarian-ness. This process began in the 1970s and culminated in the mid-1980s with the forceful change of Muslim names, resulting in mass emigration to Turkey. Thus, at the time the film was being produced the push for a Bulgarian national identity was at its height,⁷ explaining the shift in characters' names and dress from Muslim to traditional Christian Orthodox Bulgarian.

Finally, in the film, the characters become flesh and blood, and the choice of actors is an important element in the construal of meaning. The most essential choice is, of course, the main character, the narrator in the written stories. Grigor Vachkov (1932–1980) was an extremely popular film and theater actor, a factor most likely in the decision to cast him in this role. His performance is superb, but his age and maturity make his portrayal of the main character diverge widely from that of the *skaz* narrator. Mariana Divitrova (1954–2005) was also a veteran of film and theater. Her recreation of the stolen bride is sassy and assertive, and her age seems more in line with the written versions. Both actors are very natural on the screen, a feat not always carried off so well by Bulgarian actors.

6. CONCLUSION. Recreating the meaning of a text in another language, let alone another medium, results in something which is, at least to some extent, different from the original. This is a truism. Most of us in principle subscribe to the doctrine of translatability; otherwise there would be no communication across languages. However, we also know that, except for some trivial cases, no translation is one hundred per cent successful, in the sense of faithful to the original. This is at least partly due to the complex and multi-layered nature of meaning. There are various kinds of meaning and some are easier to translate than others. As we move along the conceptual/universal end of the scale towards those aspects of meaning which are more closely tied up with language-specific means of expression (stylistic, pragmatic, sound/meaning relating effects) and with culture-specific peculiarities, translation becomes more and more difficult. The divisions between the different kinds of meaning, however, are not watertight. The various aspects of meaning work together and

⁷ See Crampton 1987:204–206 for a fuller discussion.

complement each other in the creation of the overall effect. That is why we prefer to speak of a scale or a continuum rather than of discrete categories. The genetic and cultural distance between the source and the target language is another restricting factor (Shurbanov 2004).

In this paper, we have analyzed some of the ways meaning is created and recreated as we view experience through the lens of different modes of expression. Each time a story is told, its construal of experience changes. Haitov's original Bulgarian short story imparts a young, dashing hero. His voice is all we hear, as Haitov has chosen to tell the tale in the *skaz* style of a first person narrator. As told by this bold and assertive character, the story of stealing a bride takes on the flavor of a youthful prank gone wrong. Holman's English translation presents essentially the same tale, but the very act of translating into another language forces Holman to make choices in style, and pitch the story for another audience. In the process, Holman amplifies Haitov's dynamic hero into a distinctly macho one, and the smooth narrative style of the original takes on a more energetic movement that has a rapid bullet-like effect. In contrast to both print versions, the film gives us a hero who is more mature and romantic. More importantly, the film allows the viewer to access the story from a perspective other than that of the narrator.

The exotic and primitive world of the tucked-away Rhodope hamlets, with their houses scattered wide apart, has been criticized as conservative and even retrograde, but Haitov's wild tales have proved immensely popular with the Bulgarian readers and have gone through innumerable editions. They have also provided the base for several Bulgarian films. This success is probably at least partly due to the fact that with their strong, romantic, fully-rounded characters of high integrity, they offer a counterpoint to the modern consumer society. We believe that in their English and film versions Haitov's *Wild Tales* have a lot to offer to the world at large, as well.

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IDEOLOGY AND THE IMPOSSIBILITY OF ANIMAL LANGUAGE

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THE QUESTION OF WHETHER HUMANS' ABILITY TO LEARN LANGUAGE is genetically encoded or a cultural product has roiled linguists for some forty years now, ever since Noam Chomsky began to expound the nativist hypothesis for language acquisition in the late 1950s and early '60s. Arguments for and against have been plentiful and passionate, so that one can rightly speak of a "language instinct debate," as Geoffrey Sampson does in a critical refutation of the hypothesis, *The Language Instinct Debate* (2005).¹ Chomsky's disagreement with the cognitive psychologist Jean Piaget, who believed that language was a complex learned behavior built upon other learned behaviors, was also termed a "debate."² Chomsky inspired the first generation of linguistic nativists, and in the 1990s, a second generation, including Derek Bickerton with *Language and Species* (1990) and Steven Pinker with *The Language Instinct* (1994), brought the waning theory back into focus. Bickerton, for one, has retreated somewhat from Chomsky's initial hypothesis that a "language-acquisition device" exists as a separate organ in the brain. He allows his co-author Calvin to declare somewhat mildly, for example, that "Chomsky's term 'language organ' might have been unfortunate" (2000:6). Yet Stephen Anderson and David Lightfoot recently continued to use this term in another popular nativist text, *The Language Organ* (2002). Most nativists have retrenched into their position, and even Bickerton maintains that language is specifically hardwired in human biology, if not in a separate 'language organ'.

This debate essentially centers on the question of where language comes from, which is as old as philosophy itself. This paper will place the language instinct debate in its historical philosophical context by comparing it to two earlier debates on the origin of language: In the eighteenth century, Johann Gottfried Herder (1744–1803) railed against the language origin theories of Étienne Bonnot abbé de Condillac (1714–1780) and Jean-Jacques Rousseau (1712–1778); in the nineteenth century, after Charles Darwin (1809–1882) published *Descent of Man* in 1871, in which he first explicitly stated his view that language, too, evolved by natural selection, the comparative philologist Friedrich Max Müller (1823–1900) engaged in a heated battle of words with his American counterpart William Dwight Whitney (1827–1894) on the issue. The comparison will show that the crucial factor in all three

¹ The first edition of this book bears the title *Educating Eve* (1997), an allusion to Willy Russell's play, *Educating Rita*, that emphasizes the process of learning in developing language and knowledge (Sampson 2005: 2).

² See the proceedings of the conference at which Piaget and Chomsky both presented their views (Piatelli-Palmarini 1980).

of these debates has been and continues to be the ideology of human uniqueness, especially with regard to language.

1. MODERN LINGUISTIC NATIVISM AS IDEOLOGY. Although linguistic nativism remains widespread, there seems to be little evidence to support the theory. Moreover, crucial evidence that undermines the theory is systematically ignored. In Sampson's view, "[i]t is hard to imagine a clearer demonstration from academic life of the fable of the emperor's new clothes" (2005:189). He takes on Chomsky's and the second-wave nativists' claims in turn and shows them to be empty on the basis of empirical facts garnered from others' experiments. First, he refutes Chomsky's poverty of stimulus argument, which Chomsky believes to be the primary evidence in support of his theory. That is, the linguistic data children have to work with are too defective and not sufficient in the short period of time it takes them to begin speaking for them to derive grammar merely from exposure to and experience with the language. Sampson counters this with data from a study that found children attending more to motherese than to other language, which is not as defective as regular language: it contains one grammatically incorrect utterance in 1,500, whereas normal language has about 5 percent defective grammar (43–44). Not only are children exposed to relatively error-free language after all, but they are also exposed to a great deal more information than Chomsky and other nativists are willing to acknowledge. As Coleman has shown, Chomsky defines children's input as language only and excludes all the non-linguistic sensory information accompanying it. When all this information is taken into account, there is no need to assume a poverty of stimulus (Coleman 2005:205).

Second-wave nativists, whose fundamental argument rests on Chomsky's, have been eager to shore up the theory with reference to neurobiology, but most of their claims, too, prove to be overstated. For example, Pinker touts "[p]articularly dramatic evidence" for a language gene, FOXP2, from the KE family in Britain, several of whose members cannot form regular plurals and past tense forms like other native speakers, but whose "overall intelligence" seems unimpaired (1994:48–49; Sampson 2005:118–20). But Sampson discredits this evidence by noting that a second, more thorough study showed affected family members to be cognitively impaired in a number of ways with IQ scores far below average, and that the gene could not be exclusively related to language ability (2005:123–24). Bickerton, for his part, borrows the scientific authority of neurobiology by co-authoring a book with a neurobiologist, William H. Calvin, *Lingua Ex Machina: Reconciling Darwin and Chomsky with the Human Brain* (2000). Yet upon closer examination, this book, structured as an informal tête-à-tête between the two men, fails to provide the reconciliation promised in the title. Instead, neurobiologist Calvin essentially argues *against* an innate language ability while at the same time *appearing* to agree with Chomsky:

I have no quarrel with what I take to be the heart of Chomsky's argument, that human brains are predisposed to use certain types of syntax and not other possible schemes—and that it wasn't obvious how to do this from textbook versions of Darwinism. Today, we'd probably emphasize a baby's predisposition to *discover* patterns in the language (or *invent*, in the case of creoles) and thereby software a

language machine in one of the neurologically possible self-organizing schemes, rather than speaking of something being innate from conception onward. (2000:5, emphasis original)

Calvin's perception of the heart of Chomsky's argument misses the mark, dismissing its essence, namely, that language is somehow hardwired with specialized neural structures. Furthermore, Calvin argues against specific language areas in the brain because areas clearly associated with language are also used for other functions like oral-facial and hand-arm movement sequences (6).³ Bickerton, however, like the emperor of the fable, fails to see that he and Calvin basically disagree. In the concluding chapter, "Darwin and Chomsky Together at Last," he asserts the reconciliation of the two views and continues to proclaim, as Calvin clearly does not, "that language is an innate, species-specific, biological attribute that must possess a specialized neural infrastructure" (Calvin & Bickerton 2000:195).

In spite of the paucity of supporting evidence for the nativist hypothesis, Bickerton claims exactly the opposite—that the evidence is so "overwhelming, one might think that only those driven by some ideological agenda could fail to accept [it]," just as one suspects ideological (creationist) resistance in those who fail to accept the theory of evolution (2000:195). Ironically, it is the nativists' own ideology, one they share with generations of philosophers, metaphysicists, fundamentalist Christians, and, it must be said, even people in general, that motivates them to persist in this belief and even to misconstrue or misinterpret findings from neurobiology: the ideology of human uniqueness. To be sure, this ideology began as a general observation: people, indeed, seem to be unique; there are no other species that seem to approach humans in terms of cognitive abilities and moral sensibilities. Yet it became an ideology when it was used to refute Darwin's theory of evolution, which subjected the human species to the same biological processes as all other life forms, and which, today at least, has ample evidence to support it. The charm of Chomsky's theory of a language- and species-specific genetic endowment was (and is) that it allows for human evolution yet maintains (or restores) the idea of human uniqueness—with language as its defining characteristic. *Humans* have this language instinct; animals do not. Although animals may cry, scream, or utilize other vocalizations, or may, like the bees, have very precise systems for communicating with one another, such forms of animal "language" are fundamentally *different in kind* from human language and do not encroach upon this great divide that separates *us* from *them*.

That human uniqueness motivates these nativists is apparent in their emphasis on the species-specificity of the language instinct and their sharp distinction between human and animal behavior. Bickerton, for example, extols the "unique capacities" of our species and points out "the paradox... that we were produced by the same forces as other species, yet

³ In this, Calvin's views accord with those of the well-known neurobiologist Philip Lieberman, whose Darwinian, anti-nativist perspective is much more obvious than Calvin's. In *Human Language and Our Reptilian Brain* (2000), which the publisher describes as "a neurobiologist's Darwinian case for the origin of language," Lieberman contends that "human language is not a single, separate module but a functional neurological system made up of many separate abilities." <<http://www.hup.harvard.edu/catalog/LIEHUM.html>> accessed January 31, 2008.

behave so differently” (Calvin & Bickerton 2000:195). Nativists also make disparaging remarks about animal language research. Pinker compared chimpanzee language research to training bears in the Moscow circus to ride unicycles, and Chomsky called such research irrational, like trying to teach people to flap their arms and fly (Johnson 1995:1).

However, the ideology driving the nativist hypothesis comes even more clearly into view when we place the tenet of the uniqueness of human language in its historical, philosophical context. Philosophers have pondered the origin of language and the possibility of animal language for millenia because of its bearing upon human cognition and mind. One of the earliest surviving stories that inquires into language origins is a report by Herodotus in his *Histories* of the fifth century B.C. Herodotus recounts an experiment conducted by the Egyptian king Psammetichus (7th–6th century B.C.) to determine the first language: Psammetichus reportedly placed two children in the desert in the care of a shepherd with explicit instructions that they not be spoken to. The first word one of the children uttered was *bekos*, Phrygian for bread, and so Psammetichus concluded that Phrygian was the original language of men (Gera 2003:68). Psammetichus’s experiment entails curious nativist assumptions: he apparently believed that the first language was innate in babies and that other languages were culturally learned and essentially superimposed on this native knowledge. As for animals, Ancient Greeks believed that animals had language, but humans were unable to communicate with them as they could in the Golden Age: they “look back with longing to an era in which man could speak to gods and beasts. In Greek eyes, a language limited to humans represents a fall from grace, an expulsion from Eden” (Gera 2003:66).

In the seventeenth century, Descartes (1596–1650) reopened the issue for the early modern era in his *Discours de la méthode* (1637) with his doctrine of dualism. He held that humans were composed of two substances, body and soul, whereas animals were automata (Coski 2003:57). It was commonly assumed that language was commensurate with reason and a gift from God. However, in the Enlightenment, as the belief in the power of individual reason grew, philosophers began to wonder how humans might have developed language. It was in this intellectual climate that the first historical debate we will examine occurred: Herder wrote his *Treatise on the Origin of Language* in 1770, reasserting a sharp distinction between animals and people based in human reason and language that he believed Condillac and Rousseau had blurred. A century later, Darwin’s theory of evolution threatened this clear divide once again, generating the intellectual context of our second historical debate: Müller took it upon himself as the foremost authority on “the science of language” in England to refute Darwin’s inexpert speculation that language could have evolved from the cries of animals and reaffirm the uniqueness of human language and reason. His adversary, William Dwight Whitney, then joined the fray in apparent but purposefully misconstrued support of Darwin. As we shall see, the nativists today put a curious spin on these old arguments in that they reestablish human uniqueness in regard to language à la Herder and Müller but, at least superficially, *within* the framework of the theory of evolution, that is, by positing a *genetic* endowment specifically responsible for language. Without ever explaining *how* such a unique capacity for language could have

evolved or providing solid evidence for their claims, however, they show themselves to be more adherents of an ideology than scientists.⁴

2. HERDER VS. CONDILLAC AND ROUSSEAU. In 1770, the Berlin Academy of Science held an essay contest with the following theme: “Are men, left to their natural faculties, in a position to invent language, and by what means do they, by themselves, accomplish that invention?” Herder composed the winning essay *Treatise on the Origin of Language* in the final weeks before the deadline in December 1770 (Gode 1986:171). The twenty-six-year-old German philosopher experienced an explosion of creativity motivated, to be sure, by the academy’s question, but also by Condillac’s and Rousseau’s treatments of the issue. These philosophers, he felt, were grossly in error because they failed to maintain the distinction between animals and humans so fundamental to his own understanding of human nature and language development:

Condillac and Rousseau had to err in regard to the origin of language because they erred, in so well known a way and yet so differently, in regard to this difference: in that the former [in *Traité sur les animaux*] turned animals into men and the latter [in *Discours sur l’origine et les fondements de l’inégalité parmi les hommes*] men into animals. (Herder 1986:103)

Herder’s argument, by contrast, revolves around a sharp distinction between animal and human language. He acknowledges that each species has a “language of nature” (89) with which its members “sound their sensations” (99) in the group, but, as this phrase indicates, this language is specifically tied to sensory perceptions; it is a mechanical (i.e., not learned) reflex without fine distinctions (90). Man, too, Herder states, has “a language of nature all his own” (89), yet this animal language is of a completely different order than true human language, and so, to his mind, true human language could not have arisen from these animal noises.

Condillac would not have appreciated Herder’s assessment of his theory, for to his own mind, he upheld a binary opposition between man and animal, particularly in regard to language. He viewed language as indispensable to thought and stressed animals’ inability to develop it. But as Coski points out, when deconstructed, Condillac’s theory of language origin actually blurs this “superficial” distinction (2003:61), so Herder’s interpretation was essentially accurate.

Condillac, like Herder, distinguishes between a language of nature and a language of man, which he called the *langage d’action* and *la parole*, or the “natural language of animality” and “articulate speech” (Coski 2003:63). Both humans and animals have the former, whereas only humans have the latter. Yet both kinds of language originate in needs, and human reason

⁴ Yngve in *Hard-Science Linguistics* makes a similar point: he notes that a polemical attack on his depth hypothesis treated it as “a competing political ideology or religion,” and that this sort of argumentation “is not a temporary aberration” but “a growing cancer” in linguistics as a discipline (Yngve & Wasik 2004: 342–43).

arises from language. In his *Essay on the Origin of Human Knowledge* (1746), Condillac traces the origins of articulate speech to this language of action. No doubt inspired by Herodotus's account of Psammetichus's desert children (Gera 2003:101–2), Condillac assumes “two children in a desert before they know the use of any sign” who would, by virtue of their isolation and proximity, then begin “to associate with the outcry of emotions the thoughts whose natural signs they are” (qtd. in Herder 1986:99–100). Humans develop articulate speech while animals do not merely because their needs are more complex. Thus, the difference between animals and humans for Condillac is one of degree rather than kind. Although Condillac denies animals the possibility of language, “by the principles of [his] own arguments, [animals] could develop language, reason, and moral knowledge” (Coski 2003:69). It was in this way that Condillac turned animals into men.

Rousseau turned men into animals, especially in his *A Discourse upon the Origin and the Foundation of the Inequality among Mankind*. (1754), in that he idealized animals and “man in a state of nature” as simple and peaceful beings whereas he degraded civilized men to degenerates. He believed language contributed significantly to this downfall because it enabled humans to adapt and make choices within their environment rather than live exclusively by instinct. But on the question of how language arose, in the particular work that Herder refers to,⁵ he could come up with no explanation. Rather, he saw only paradox: how could humans develop language without abstract thought, and how could abstract thought develop without language? (Rousseau 2005:49–50). Herder reacts to this paradox when he castigates Rousseau in his treatise for failing to explain the human origin of language:

[T]o cast doubt on Condillac's explanation [of the human origin of language], no Rousseau was needed; but to deny straightaway—because of it—all human possibility of the invention of language, that to be sure did require a little Rousseauesque verve or nerve or whatever one may wish to call it. Because Condillac had explained the thing badly, could it therefore not be explained at all? (Herder 1986:103)

Still, Rousseau did propose a theory of language origins that was published after Herder's essay appeared, his *Essay on the Origin of Languages which Treats of Melody and Imitation* (1781). In this theory, like Condillac, Rousseau presumed a gradual development of human language from natural cries. Yet he attributed this to “moral needs, passions” (Rousseau 1986:12) and claimed that the first languages were children of pleasure rather than need (*filles du plaisir et non du besoin*, quoted. in Oliver 2006:109).

For Herder, on the other hand, the origin of language had to be sought in a quality that distinguishes men from animals, and he found it in the uniquely human characteristic of *Besonnenheit*, or reflection. This reflection constitutes “a totally distinct orientation and

⁵ Herder comments upon Rousseau's view of the origin of language as expressed in his *Discours sur l'origine* because the latter's *Essay on the Origin of Languages which Treats of Melody and Imitation*, although written as early as 1755, was not published until 1781, several years after Herder wrote his prize-winning essay.

evolution of powers" (1986:110) that raises man "above the animals not by stages of more or less but in kind" (108). Not only does man possess the unique quality of reason, but he has it in lieu of adequate instincts; because he has a weakness of automaticity, he must use reflection to adapt to the range of experience his species is subject to—and this reflection, in turn, automatically leads to language.

Herder describes the mental processes of a preverbal man perceiving a sheep in order to clarify the relationship between the power of reflection inherent in man and the emergence of language: whereas a wolf or lion would necessarily smell food and act accordingly, the man is free of the instinct of these predators and instead "reflects" on the object of his perception out of a desire to "come to know the sheep," to relate this object of perception to himself. Thus, "his soul in reflective exercise seeks a distinguishing mark—the sheep bleats!" In the man's mind, the sheep becomes "that which bleats," and even without a word to represent it by, the concept by itself constitutes the beginning of language:

The sound of the bleating perceived by a human soul as the distinguishing mark of the sheep became, by virtue of this reflection, the name of the sheep, even if his tongue never tried to stammer it.... This was the conceived sign through which the soul clearly remembered an idea—and what is that other than a word? And what is the entire human language other than a collection of such words? (117)

Returning to the sheep example a bit later, Herder makes it clear that this preverbal man is like a child. He refers to the sheep-perceiving subject as "the learning beginner" (129), and actually likens the beginnings of language to the babbling of infants: "The human race in its childhood formed language for itself precisely as it is stammered by the immature: it is the babbling vocabulary of the nursery" (135).

Comparing Herder's reflecting preverbal child/man to Condillac's two children in the desert, we notice that Herder's learner does not develop language in order to share his thoughts or emotions with an Other or by means of any mutual agreement, but in order to make sense of his perceptions for *himself*. For Herder, thus, language does not arise out of convention or as a tool of communication, but as a necessary consequence of man's categorical perception of the world, as "an agreement of his soul with itself" (119). This habit is as natural to the human organism as the instincts are to the animals. Importantly, Herder builds his argument upon a diametric opposition of instinct and reason—it is only where instinct is absent that reflection arises, and animals, by virtue of their instincts, would never be capable of even a flash of reflective thought.

Herder's position anticipates the nativists in some important ways—most especially in the gulf that he perceives between humans and animals. In fact, Chomsky famously used Herder along with other early language philosophers from the Port-Royal grammarians to Wilhelm von Humboldt in searching for historic precedents for what he called *Cartesian Linguistics* (1966). The Cartesian view of language according to Chomsky maintains that, "in its normal use, human language is free from stimulus control and does not serve a merely communicative function, but is rather an instrument for the free expression of thought and for appropriate response to new situations" (Chomsky 1966:13). But Chomsky disregards

the role Herder attributes to reason in the development of language and emphasizes instead weakness of instinct (14–15). This is somewhat ironic, I think, because, as we know, in his own theory, Chomsky posits an instinct or organ for language and downplays the potential role of reason in its development. The infinite creativity of language and the freedom of response mean that language cannot be an instinct, yet an instinct makes it possible. In a sense, then, Chomsky proposes the opposite of what rationalists like Descartes and Herder did for the emergence of language, and yet they *are* precursors because they maintained a clear distinction between animals and humans.

Although both Condillac and Rousseau claimed that animals and humans were distinct, Herder recognized that their theories of the origin of language in animal-like behavior dangerously blurred the line between them. In fact, one could argue that Condillac and Rousseau anticipated or “prefigured” Darwin’s theory of evolution in some ways whereas Herder “categorically denied it.”⁶

3. MÜLLER VS. DARWIN AND WHITNEY. By the time Darwin published *On the Origin of Species* spelling out his theory of evolution in 1859, the question of the origin of human language had fallen out of favor among linguists and philologists as they deemed it speculative and unanswerable. Linguists were attempting to cut ties with their philosophical roots and establish their discipline as a true science. In 1866, the newly founded Linguistic Society of Paris even stipulated in its bylaws that no communication on the subject would be published (Wade 2003). Nonetheless, as language had long been upheld as a unique capacity of humans, the question took on new urgency when the implications of Darwin’s theory became clear. Darwin did not explicitly discuss the origins of human language in *Origins*, but he did venture to state his views in *Descent of Man* in 1871. (Alter 2005:182). In essence, Darwin argued, as Condillac and Rousseau had done, that language emerged from the imitative cries of animals—and importantly, that it began to emerge in our prehuman ancestors: “[M]ay not some unusually wise ape-like animal have imitated the growl of a beast of prey, and thus told his fellow-monkeys the nature of the expected danger? This would have been a first step in the formation of a language” (C. Darwin 1874). As a result, the evolution of humans’ mental capacities must have depended to some extent on the development of language taking place at the same time, and the evolution of language on continually improving mental capacities.

Just as Herder felt compelled to shore up the barricade between animals and humans against the threat posed by Condillac’s and Rousseau’s theories of gradual language development, adherents of natural theology fought this attack on humans’ special position with a *linguistic* natural theology drawn in large part from Herder’s language theory (Alter 2005:58).⁷ Friedrich Max Müller, the Oxford comparative philologist and Sanskritist, was

⁶ Kelly Oliver makes precisely this point about Rousseau’s theory of language origins, though I believe the same could be said for Condillac’s (2006: 121).

⁷ Natural theology is a branch of philosophy that attempts to prove the existence of God not by recourse to supernatural or miraculous events but using evidence from the natural world. William Paley’s *Natural Theology: or, Evidences of the Existence and Attributes of the Deity, Collected from the Appearances of Nature* is one of the most famous early presentations of the argument of

one of the most famous persons to do so. Müller gave numerous popular lecture series, including two series of *Lectures on the Science of Language* in 1861 and 1863, as well as a series specifically designed to refute Darwin's theory of evolution as applied to language, "Mr. Darwin's Philosophy of Language" in 1873 (Müller 1873, Müller 1890:417).

The American Orientalist, William Dwight Whitney, however, came down on Darwin's side of the argument, and a rather heated feud ensued between Müller and Whitney.⁸ The disagreement was spurred on by Darwin's son George, who wrote an article summarizing Whitney's refutations of Müller's arguments so that they could be published in England. (G. Darwin 1996 [1874]:277–90). As I have enumerated the details of this feud elsewhere (see Sutcliffe 2004), I will not repeat them here.⁹ Rather, I just want to mention Müller's basic arguments in this context because they are so similar to their eighteenth- and twentieth-century counterparts. Moreover, the direct connection to the person of Charles Darwin and Müller's contemporary reaction to the threat posed to man's elevated status make it even easier to see that the parallel arguments of the preceding and subsequent centuries were similarly motivated.

Essentially, following a Herderian tack, Müller argued that language is "the one great barrier between man and brute... Language is our Rubicon, and no brute will dare to cross it" (Müller 1862:354). He believed that words and ideas were unified in *logos*, and that *logos*, similar to Herder's *Besonnenheit*—a capacity for abstract, general thought—distinguished men from animals not by degree but in kind. Though he personally believed that language was a divine gift and emerged fully formed in man, for the sake of arguing against Darwin's theory, he entertained the idea of how language might have developed gradually in humans. In such a case, he argued, the "germ" of language had to be present in the earliest humans, who would be human and not animal precisely because of it. This germ of language, "will remain the specific difference of himself and all his descendants...It was there *potentiâ* from the beginning... (1890:454). In other words, whether language emerged gradually or was bestowed fully formed upon humans, for Müller, it remained *the* defining characteristic of humankind.

George Darwin accused Müller of being "clearly impelled by an overmastering fear lest man should lose 'his proud position in the creation' if his animal descent is proved" (quoted in Müller 1890:435, emphasis original). Though Müller denied this charge (435), his own

intelligent design. Though originally published in 1802, this book was very popular in the late nineteenth century, appearing in a number of editions (e.g., 1836, 1854, 1860, 1890), and it continues to be popular today: in 2001, a paperback reprint of the 1890 edition by the Society for Promoting Christian Knowledge in London was issued (Paley 2001).

⁸ Alter points out that Whitney's agreement with Darwin was more apparent than real and motivated by Whitney's desire to bring his own views into notice, especially in England, where Müller's authority seemed absolute (2005:182). Thus, he downplayed "his substantial disagreement with Darwin on the issue of speech origins (182–83)." Although Whitney generally agreed with Darwin that humans could have evolved from apes, he believed that language only emerged once man was man, and not simultaneously with human development (158).

⁹ Moreover, Alter provides a very thorough account of the controversy in Chapter 8 of his 2005 book, "The Battle with Max Müller" (2005:174–206).

quasi-religious rhetoric, as well as his denigration of the lower animals, disclose its accuracy. Müller concluded his response to George Darwin's article with a plea to use caution "in the Temple of Science," lest we abuse the gifts we have received and throw ourselves back "to the dreaded level of the gorilla" (455).

In the second edition of *Descent of Man*, Charles Darwin then specifically refuted Müller's argument with reference to Whitney (C. Darwin 1874, chap. 3):

Several writers, more especially Prof. Max Muller, ...have lately insisted that the use of language implies the power of forming general concepts; *and that as no animals are supposed to possess this power, an impassable barrier is formed between them and man....* The judgment of a distinguished philologist, such as Prof. Whitney, will have far more weight on this point than anything that I can say. He remarks ('Oriental and Linguistic Studies,' 1873, p. 297), in speaking of Bleek's views: 'Because on the grand scale language is the necessary auxiliary of thought... he would fain make thought absolutely impossible without speech, identifying the faculty with its instrument. He might just as reasonably assert that the human hand cannot act without a tool. With such a doctrine to start from, he cannot stop short of Max Muller's worst paradoxes, that an infant (in-fans, not speaking) is not a human being....' (emphasis added)

From Müller's previous quotation about the germ of language potential, we know that he would not agree with Whitney's assessment of him here. An infant would not fail to be human because it lacked speech; rather it would be a human *potentiâ*. Whitney pushes Müller's ideas to their logical and paradoxical conclusion. Curiously, Whitney's description of the not-speaking and therefore not quite human infant that Müller's logic produces is reminiscent of Bickerton relegating infant babbling to the category of proto- (and therefore not human) language.

4. CONCLUSION. Chomsky, Pinker, Bickerton, and other modern nativists are "clearly impelled," if not by an "overmastering fear" that man might lose "his proud position," then by a fundamental belief that humans must somehow be qualitatively different from other animals. When we compare their arguments with those of Herder and Müller, thinkers of vastly different and much more religious ages, this becomes especially obvious. Consider the parallels between Bickerton and Herder and Müller. Bickerton, like Herder, assumes a sharp distinction between the languages of nature and true human language. He acknowledges that animals communicate, but he categorizes their communication systems, as well as those of toddlers and even pidgin speakers, as protolanguage, something qualitatively different from true human language. As it consists of mere strings of nouns and verbs put together without any formal structure, it lacks syntax. Syntax thus becomes, in words reminiscent of Müller's, "the real rubicon, unpalatable though this may be to the philosophically minded" (2000:24).

To be sure, Bickerton and the other nativists have moved the bar over, allowing for more possibilities of animal communication. Bickerton, for example, is willing to entertain the

idea that other animals might one day, “millions of years hence,” evolve and develop the biological capacity for language (2000:23). But it is telling that he, like Herder and Müller before him, posits a rubicon at all. The threat of man losing his proud position in creation is thus relegated to a distant future.

Can there be animal language? Can it be the same in kind and differ only in degree from human language? I think that we do not yet know, but we hurt the cause of science when we assume a barrier between humans and animals. I hope that discussions that move beyond human speech to seek a better understanding of animal consciousness and communication can help us to bridge the gap between man and “brute” and reconcile man’s connection to the rest of the sentient world with the seeming uniqueness of his language without recourse to divine intervention or a magic, genetically encoded black box in the brain. It is to be hoped that discoveries in neuroscience and neurobiology will contribute to this goal.

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A PURPORTED NONLINGUISTIC FACTOR AND AMBIGUITY RESOLUTION

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YNGVE (1996:82) HAS USED THE “GO” EXAMPLES to illustrate how a person’s functional role while communicating can in certain cases make the question of “ambiguity resolution” simply go away. He compares two different situations. In the first, a boy is lined up and about to run a race. The starter says, “Go,” and the boy begins to run. In another situation, the boy is at home with his sister, who says, “Let’s play a game.” The boy responds, “What game should we play?” to which his sister replies, “Go.” To the same sound, the boy has a completely different response in a different situation, because he has completely different expectations. In short, the participant’s expectations, described in Hard-science linguistics (HSL) in terms of a role part (Yngve 1996:193), provide for a certain interpretation under certain circumstances: no search over a range of possible interpretations, no “ambiguity resolution” need take place.

This paper will present further evidence that ambiguity resolution is an explanation looking for a problem. It will do so by looking at what self-described mainstream linguistics considers to be *nonlinguistic* factors, e.g., the properties of the people, objects, and environment involved in a communicative interaction. Hard-science linguistics treats all factors directly relevant to how people communicate as “linguistic” (Yngve, 1996:126–33).

1. DISAMBIGUATION IN A REAL-WORLD EXAMPLE. To illustrate, let us take the case of the purported need to “disambiguate” when a person says something like, “Look! There is a snake in the grass” (Sypniewski 2008). Now, according to a typical account—one in which factors such as the situation in which a person hears the speech are treated as nonlinguistic¹—on hearing this, the listener must perform a search over all the possible interpretations of *snake in the grass* (e.g., ‘a snake in any of various plants of the family Gramineae’, ‘a snake in *Cannabis sativa*,’² ‘a deceptive and untrustworthy person’, ‘an untrustworthy person in Gramineae’, etc.) and somehow then determine the appropriate interpretation.

¹ Such an account will be found in any linguistics of *language*, because such accounts treat people communicating in real situations as something *apart* from language, e.g., the people are “users of the language” and the elements of the situation, “extra-linguistic factors.” Hard-science linguistics is a linguistics of *people* communicating in real-world situations. All aspects of the people and situations relevant to the people communicating are “linguistic” in HSL, including real-world objects and channels of energy flow, such as the sound waves of speech and the light waves which make it possible for people to see their environment and the objects and other people in it.

² According to one reviewer, our reference to ‘*cannabis sativa*’ (as a possible interpretation when hearing “grass”) “seems tongue in cheek.” We fail to see why he thinks so. According to any textbook



Figure 1. *Experiment I set-up.*

As research on both chimps and humans has shown (e.g., Mitchell 1997, Povinelli & Eddy, 1996), much is communicated via directed gaze. The authors show—via a pair of simple experiments—how directed gaze and other purportedly *nonlinguistic* factors frequently coordinate with speech to clarify reference by bringing elements of people’s surroundings into salience. In so doing, the researchers will bolster Yngve’s argument (1996 *passim*) that factors such as gaze, gesture, and so on are not properly “nonlinguistic”, and that linguistics should first and foremost focus on the realities of people communicating.

2. EXPERIMENT I. Experiment I was designed to provide preliminary data for research into the effect, if any, that directed gaze and glancing has on human-to-human communication.

2.1. SUBJECTS. The subjects for Experiment I were 20 adult university students at Rowan University. The group consisted of a combination of native and non-native speakers, all of the latter having completed an extensive ESL program at least one year prior to participating in this Experiment. All participants were identified by number only. The only personal data that was collected was age, sex, and ethnic origin since these were judged of potential relevance to the study.

2.2. SET-UP. The equipment used was limited to a standard deck of playing cards. The experiment was conducted in a small office. The experimenter and each subject sat at adjacent corners of a table (see **Figure 1**).

2.3 PROCEDURE. Each subject was presented with six pairs of playing cards, two at a time, face down. The subject was then asked to guess which of the two cards had the higher

treatment of lexical ambiguity, since one possible interpretation of “grass” is ‘cannabis sativa’, the hearer should have to disambiguate “grass” upon hearing “snake in the grass” so as to exclude ‘cannabis sativa’ as a possible interpretation. According to all theories that refer to people and the situations in which they communicate as “nonlinguistic” or “extra-linguistic” information (i.e., non-HSL theories), this includes the use of such information in the purported disambiguation process.

Trial	NO GAZE	NOTE	GAZE
1	X		
2			X
3		X	
4	X		
5			X
6		X	

Table 1. *Summary of Experiment I trial conditions.*

value (in the traditional poker order). In two instances, the researcher did not look at the cards prior to the subject's making a choice (NO GAZE). In two others, the researcher did look at the two cards prior to the subject's making a choice, and lingered on one card longer than on the other (GAZE); in a subset of the GAZE conditions, the researcher also tapped on the desk near a particular card. For the third pair, the researcher did not only linger on a card longer than the other but was seen by the subject to make an entry with an unknown purpose on the data collection form prior to the student's selection (NOTE). All other entries were made after the student selected a card. When the entry was made, the researcher visibly noted (but did not display to the subject) the higher valued card. Subjects were required to do nothing other than make six choices. The experimental conditions are summarized in **Table 1**.

The researcher did nothing to intentionally confuse or mislead the subjects. The only "deception" that was used was not to tell the subjects the purpose of the study in order to gather more reliable results. The subjects were told that the purpose of the study was to test the assumption that "random behavior" (selecting the highest card without any clues) could be adequately simulated through a coin toss and that this experiment was an attempt to gather data for that study.

The initial recording was on a printed sheet (note the use of "note taking" in the experimental design).

2.4. RESULTS AND DISCUSSION OF EXPERIMENT I. Gender, a potential intervening variable, turned out to have no effect. The proportion of correct guesses was not significantly different for males ($\text{avg}_M = 0.43$, $n_M = 7$) and females ($\text{avg}_F = 0.63$, $n_F = 10$), given a test of median rates of correct response (Wilcoxon $W = 22.5$, $\text{sig.} > 0.21$).

Overall, there were no significant differences among median rates of correct guesses for the six trials (Kruskall-Wallis = 4.76, $\text{sig.} > 0.44$).

We compared the proportion of correct selections (those in which subjects actually chose the higher card) when there were looking and/or tapping cues ($\text{avg}_{\text{CUE}} = 0.45$, $n_{\text{CUE}} = 10$) vs. those in which there were no cues at all ($\text{avg}_{\text{NO-CUE}} = 0.47$, $n_{\text{NO-CUE}} = 18$). Recall that the researcher knew what the correct response when giving any cue, and thus gave an appropriate cue; when he gave no cue, the subject had no way to choose except by guessing. We found no significant difference in the median rates at which subjects made

correct selections when cued and when forced to guess ($W = 92.0$, $\text{sig.} > 0.93$). Thus, we could conclude that subjects generally must have ignored the non-vocal cues.

We considered the possibility that missing data in regard to gaze and gesture on Trial 5 could have affected the outcome there and made the same comparison again without Trial 5. The results were essentially the same, with cued responses ($\text{avg}_{\text{CUE}} = 0.55$, $n_{\text{CUE}} = 17$) and pure guesses ($\text{avg}_{\text{NO-CUE}} = 0.47$, $n_{\text{NO-CUE}} = 18$) showing no significant difference ($W = 136.5$, $\text{sig.} > 0.58$).

By itself, tapping had no significant effect, with the rate of correct responses under the cued conditions ($\text{avg}_{\text{TAP}} = 0.50$, $n_{\text{TAP}} = 18$) and the uncued (pure guessing) condition ($\text{avg}_{\text{NO-TAP}} = 0.47$, $n_{\text{NO-TAP}} = 18$) showing no difference ($W = 155.0$, $\text{sig.} > 0.82$).

Finally, the effect of gaze alone was also not significant; whether a gaze cue was provided ($\text{avg}_{\text{GAZE}} = 0.50$, $n_{\text{GAZE}} = 10$) and when it was not ($\text{avg}_{\text{NO-GAZE}} = 0.50$, $n_{\text{NO-GAZE}} = 18$), there was no difference ($W = 92.0$, $\text{sig.} > 0.93$).

The apparent lack of results showing the effects of gaze may have been due to several factors. The most obvious may have been that the researcher and subject were seated at right angles to each other. As such, there was apparently no eye contact except during the discussion about the purpose and conduct of the experiment. The subjects concentrated on the cards rather than on the researcher. The pointing and tapping may have been too subtle of a cue or may have been actively ignored as an influence.

Cultural differences between some subjects and the researcher may have been a factor. This was not pursued. Unfamiliarity with a research setting may have been more of a factor since none of the subjects had ever participated in this sort of experiment before. There was a sense that some of the subjects had performance anxiety. At least one subject visibly pointed at cards as quickly as possible in order to complete the experiment as quickly as possible.

This experiment suggests that gaze may not always be effective. The surroundings might need to be suitable, e.g., face-to-face interaction may be preferable; gaze might be more useful in informal settings; etc. More work needs to be done to determine what aspects of the surroundings might make the use of directed gaze more effective as a communicative tool.

As preparatory to Experiment II, the results of Experiment I show clearly that subjects do not simply act based on the researcher's gesture or gaze alone.

3. EXPERIMENT II. Experiment II was designed to test each subject's interpretation of purportedly "structurally ambiguous" instructions by the researcher. On some trials, the experimental set-up made the interpretation irrelevant; on other trials, the set-up forced one particular interpretation rather than the other. See the "Procedures" section, below.

3.1. SUBJECTS. Participants in Experiment II were 19 native-English speaking adults affiliated directly or indirectly with the University of Toledo. No other demographic data was collected concerning the subjects' characteristics.

3.2. SET-UP. The physical set-up for the experiment included a sheet of green cardboard marked off with two heavy black rectangular areas which the researcher referred to as "boxes" when speaking to the subject. Just before each trial, the researcher arranged four



Figure 2. *Experiment II set-up.*

cards—two white and two black—on the board such that one card was inside each box and one card outside each box, but immediately next to the box (see insert at left of **Figure 2** for one of the eight arrangements, which are summarized in **Table 2**, overleaf). The experimenter and the subject sat opposite each other at a table. A blue card was used as a marker for the subject to place on the board (see **Figure 2**).

3.3. PROCEDURE. On each trial, the researcher read from a cue card which the subject could not see and then looked at the subject or one of the boxes (e.g., the box to his left) while saying what was written on the card (e.g., “Put the marker in the box next to the black card”). The cue card also contained a trial identifier for recording purposes (e.g., “Trial 1”). It also had instructions to the researcher on how to lay out the cards (e.g., BBWW, indicating a black card inside the left-hand box, a black card outside the left-hand box and next to the box, a white card inside the right-hand box, and a white card outside the right-hand box and next to it) and where to direct his gaze (at the left box / at the right box / at the subject). Again, refer to **Figure 2** (inset) to see the four possible card locations. With about half of the subjects, the researcher merely gave the marker to the subject at the start of the trials by laying it down on the table between them. With the remaining subjects, the researcher picked up the marker just before each trial, and held it in front of his face while giving the instruction and directing his gaze at the left-hand box / at the right-hand box / at the subject. This was done to see if overtly attempting to make the gaze salient affected the outcome. After each trial, the researcher recorded the trial number and where the subject placed the marker (“L”: inside the left-hand box / “R”: inside the right-hand box / “X”: not inside either box). He also recorded whether he held up the marker in front of his face in order to make his gaze salient.

Supposedly, there is ambiguity in “Put the marker in the box next to the black card” involving the prepositional phrase “next to the black card”... is it *coordinate with* “in the box” (thus also modifying the verb “put”) or *iteratively embedded* (thus modifying the noun phrase “the box”)? If *coordinate*, the subject would be expected to put the marker so that

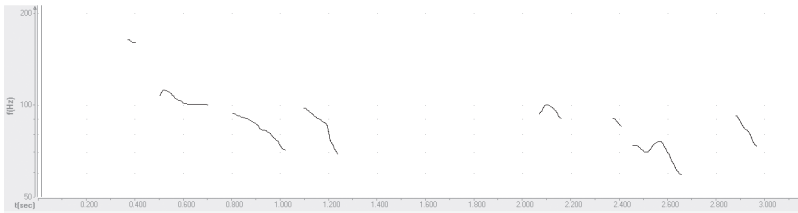


Figure 3. Frequency contour for the purportedly coordinate-structure version of "Put the marker in the box next to the black card".

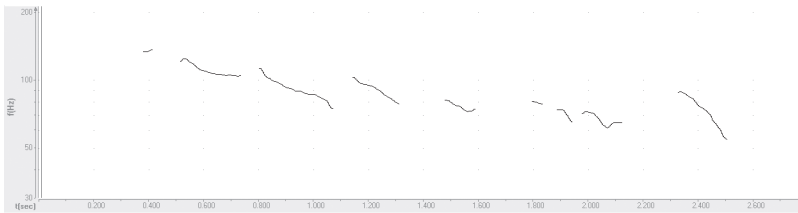


Figure 4. Fundamental frequency contour for the purportedly embedded-structure version of "Put the marker in the box next to the black card".

it is in a box *and also* next to a black card, i.e., in the left-hand box. If the latter, the subject would be expected to put the marker in *the box which is next to the black card*.

In order to determine the impact of the directed gaze of the researcher, the researcher maintained a constant and relatively flat intonation on all trials. In some cases, a possible way for a participant in a linkage to make a supposedly ambiguous statement clearer is to vary intonation. If, for example, the researcher had said "Put the marker in the box next to the white card" with similar intonation patterns over "in the box" and "next to the white card" (ending with a rapid falloff in fundamental frequency at "box" and again at "card"), the participant would likely have reacted differently from a case in which the researcher had stretched a similar intonation pattern over "in the box next to the white card" (with only one such rapid falloff in fundamental frequency, at "card"). For the purpose of this study, it was pertinent to maintain a constant intonation pattern so that we could isolate the variable of interest, directed gaze.

Figure 3 shows the fundamental frequency contour for "Put the marker in the box next to the black card" in the case in which a speaker expects the hearer to place the marker inside a box so that the marker is also next to a black card, the interpretation usually thought of as involving coordinate syntactic structure.³ There is an observable pause between "in the box"

³ **Figures 3–5** were made using SIL's Speech Analyzer software from a recording of the voice of one of the two researchers involved in collecting data for Experiment II. The frequency contours have been highlighted with a software paint tool to make them stand out more clearly and to connect any very short discontinuities in the calculated line during times in which the speech itself is continuous.

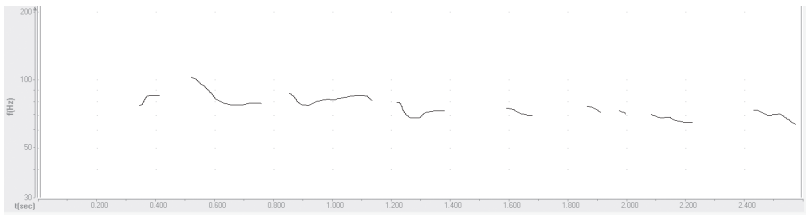


Figure 5. Frequency contour for the flat-intonation version of “Put the marker in the box next to the black card” used by the researchers.

Trial	Researcher Gaze	L-R Card Arrangement ⁴	Card Named	Targets ⁵	Predicted Placement	Speech Sufficient
1	left	BWBW	black	2	left	N
2	right	BWBW	white	1	right	N
3	left	WBWB	white	2	left	N
4	right	WBWB	black	1	right	N
5	left	BBWW	white	?	right	Y
6	right	BBWW	black	?	left	Y
7	subject	WBWB	black	1	unpre- dicted	N
8	subject	WBWB	white	2	unpre- dicted	N

Table 2. Summary of Experiment II trial conditions.

and “next to the black card” in **Figure 3**. Note also that the falling contour on the former almost repeats on the latter.

Figure 4 shows the frequency contour for the case in which the speaker expects the hearer to place the marker inside a box which is next to a black card. Note the overall slowly falling fundamental frequency contour.

Figure 5 shows the fundamental frequency contour for the cue as given by the researcher (which required practice to achieve). Note that there is neither an obvious overall falling contour in the fundamental frequency nor is there a clear pause as in **Figure 3**. This was done so that a vocal stimulus could be provided without providing the subject with an auditory cue to allow the subject to forego the purported disambiguation process.

⁴ The researchers indicated card placements in top-to-bottom, left-to-right order, e.g., WBWB indicates the arrangement shown in **Figure 6** (overleaf)

⁵ As explained elsewhere, “targets” refers to the number of targets in the interpretation. If a hearer interprets “Put the marker in the box next to the white card” with two targets, we suppose he/she will try to place the marker in a box and next to a white card; if he/she interprets the same speech with one target, then he/she will try to place the marker in a box that is next to a white card.

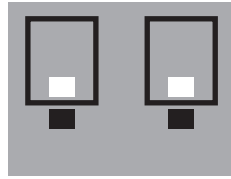


Figure 6. Card arrangement for the WBWB sequence.

There were eight trials in all, four experimental trials and four treated as controls (see **Table 2**). This produces four experimental trials testing the effect of researcher directed gaze on the subject's placement of the marker. In each of the four conditions, if gaze is irrelevant, and subjects really perform a strictly grammatical ambiguity resolution operation (i.e., one referring to "nonlinguistic" information only after some sort of parsing has been performed to detect the ambiguity, rather than simultaneously utilizing parallel sensory information), then actual placement in the left or right box will be randomized, not consistent as predicted in columns five and six of **Table 2**. Of the four control conditions (trials 5–8), two are to determine whether the subject simply ignores what the researcher says and uses gaze as the only cue; in those trials, 5 and 6, the researcher provides a gaze cue which contradicts the speech cue. For example, in trial 5 the researcher looks to his left, and says, "Put the marker in the box next to the white card." Both white cards on this trial are on the researcher's right. Hence, the speech cue requires the subject to place the marker in the box to the researcher's right, but his gaze cue is to his own left. Note that in the control conditions of trials 5 and 6, the purported ambiguity does not matter, because the location named by the researcher is the same regardless of the purported grammatical interpretation (thus, the interpretation is marked as "indeterminate"). For example, take trial 6. The left-hand box has a black card next to it and a black card inside it. The right-hand box has a white card next to it and a white card inside it. The researcher says, "Put the marker in the box next to the black card." Whether the subject purportedly interprets "in the box next to the black card" as coordinate (inside a box and next to a black card) or involving embedding (inside a box which is next to a black card), the same box fits in both cases. In trials 7 and 8, which were also present as controls, the researcher's gaze is at the subject, neither at the left nor right box. The order of the trials was randomized with each subject; thus trial numbers identify the trial conditions, not the order of the trials.

For example, if the arrangement is BWBW (trial 1 — black cards inside the boxes, white cards outside the boxes but next to them), and the researcher says, "Put the marker in the box next to the black card" (card named = "black"), the subject may choose to place the marker inside either box, but no matter which box the subject places the marker in, there are two targets involved: a correctly-placed marker will be both *inside a box* and *next to a black card*. On trial 1, we predict that (if gaze is relevant), the subject will tend to place the marker to the left, where the researcher's gaze has been directed. The researcher's speech alone is insufficient to allow the subject to determine where to place the marker, since placement inside *either* box on trial 1 means placing the marker correctly relative to both

targets. So, the subject is expected to look for something else to help him/her decide (researcher gaze).

On the other hand, if the arrangement is WBWB (trial 3) and the researcher gives the same instruction, there is only one target for the marker no matter which box the subject places the marker in: both boxes are *next to a black card*.

We therefore referred to two key conditions as “1-target” and “2-target” placements. In this way, we do not have to make any assumptions in regard to syntactic processing and purported disambiguation processes. There are two physical objects (a box and a card) which are involved in placing the marker. The 2-target interpretation is the one in which the marker is placed relative to two separate objects: (a) inside a box and (b) next to a card of a certain color. The 1-target interpretation is the one in which the marker is placed in a box which itself fulfills an additional condition (that of being next to a card of a certain color).

Given the conditions described, a subject should be able to place the marker correctly if responding to the researcher’s speech alone only on trials 5 and 6, when the gaze cue is completely redundant and there is no purported structural ambiguity.

3.4. RESULTS AND DISCUSSION OF EXPERIMENT II. Since we were interested in determining whether directed gaze was a factor, we first compared the six trials (trials 1–6) in which the researcher’s gaze was directed at a possible “landing site” for the marker. There were significant differences (Kruskal-Wallis = 23.15, sig. < 0.001) among the median proportion of correct placements across trials, indicating gaze did exert some influence.

We then compared the median proportion of times the subject’s response matched the predicted landing site based on whether or not the marker was held up to make the researcher’s gaze salient (median_{USIG.} = 0.50, *n*_{USIG.} = 7) or was simply placed down on the table (median_{DOWN} = 0.54, *n*_{DOWN} = 12). We found by comparing these medians that trying to make the speaker’s gaze salient in this way made no difference (Kendall’s W = 48.0, sig. > 0.61). We now understand that this may be due to undetected microsaccades (Engbert & Kliegl 2003), very fast subject eye motions undetected by the researchers. Subject microsaccades may have allowed them to see where the researcher had his gaze fixed, but may have been so rapid that the researcher could not detect them.

We checked to see whether the subjects merely attended to the researcher’s gaze, ignoring his speech. They did not. When both the 1- and 2-target interpretations pointed to the same landing site, and there was a *contradictory* gaze cue, subjects attended to the gaze cue only up to 26% of the time on 1-target trials and up to 32% of the time on 2-target trials. (This seems to show the 1-target interpretation is inherently “stronger” as the 2-target interpretation is more easily overridden by a contradictory gaze cue. See also below.)

There was a slight significant tendency for the subjects to place the marker to their right in preference to placing it to their left (54% of the time vs. 46% of the time, sign test = 3.58, sig. < 0.001). However, when there was no gaze cue and the placement of the marker was not situationally forced (that is, on trials 7–8), there was no left-right bias (sign test = 0.29, *p* 0.77).

When a 2-target interpretation was forced, no anomalous responses (placing the marker outside both boxes) were observed. However, when a 1-target interpretation was forced, a *majority* of the subjects (53%) produced *only* anomalous responses. In this way, *subjects*

showed a marked preference for avoiding the 1-target interpretation, which is conventionally explained in terms of a prepositional phrase embedded within another prepositional phrase ("in the box next to the white card" \approx "in the box which is next to the white card"). These particular results show that *even when contextual factors are equalized, the two interpretations do not have coequal potential as products of a purported disambiguation process.*

The presence of differences in (a) how subjects responded to contradictory gaze cues on 1-target and 2-target trials and (b) how often subjects produced anomalous responses on 1-target and 2-target trials showed that the 1-target and 2-target interpretations are not simple alternatives, even when contextual factors are controlled. It is apparent that subjects did not simply hear the researcher say "Put the marker in the box next to the white card", compute two possible interpretations, and then select among them based on other cues. They showed a marked preference for *avoiding* the 1-target (embedded prepositional phrase) interpretation, *even when additional cues pointed to it.*

4. CONCLUDING REMARKS. The two experiments point to a very different process than the one usually supposed, in which a person computes two (or more) possible interpretations for purportedly ambiguous speech and then performs some sort of search over other domains (using *nonlinguistic* cues) to disambiguate the speech. We suggest, based on these results, that there is no such post-parsing process as disambiguation, and that the purportedly *nonlinguistic* cues are in fact central to how people interpret others' speech. Coleman (2006) showed that it is well within the capability of a formal *linguistic* account to deal with the detection of gaze as an integrated component of human communication, one that is co-temporally coordinated with audition. Thus, we suggest that future studies of ambiguity should take a broader view of what are considered to be "linguistic" factors, so as to avoid inappropriately setting speech (and speech understanding) aside from the other channels with which speech is in fact highly interdependent.

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LOWER-LEVEL PROCESSING AND STRATEGY USE IN L1 AND L2 READING COMPREHENSION AMONG CHINESE-SPEAKING EFL LEARNERS

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IN THE LAST DECADE, the relationship between native language acquisition and foreign language learning has been extensively studied in regard to the interaction of English and other various languages in reading processes (e.g., Akamatsu 2003, Geva & Siegel 2000, Gottardo *et al.* 2006, Van Gelderen *et al.* 2004, Wade-Woolley 1999).¹ Reading in either one's first language (L1) or second language (L2) is a complicated activity requiring the activation of numerous lower (bottom-up) and higher (top-down) processes at word and text levels (Akamatsu 1998). While reading in a second language, readers not only concentrate on the execution of the cognitive activities of the second language, but also on the L1 knowledge in interaction with the L2. Whether the interaction between L1 and L2 is inhibiting or compensating in the comprehension of L2 is still a controversial issue (e.g., Stevenson, Schoonen & de Gloppen 2003).

Within the context of this controversial issue, two hypothetical domains have been proposed: the Linguistic Threshold Hypothesis and the Linguistic Interdependence Hypothesis. The Linguistic Threshold Hypothesis proposes that a certain threshold level of L2 proficiency is necessary for L1 reading ability to transfer to L2 reading (Alderson 1984; Schoonen, Hulstijn & Bossers 1998). According to Alderson, poor reading in a foreign language is due to a poor reading ability in the first language, leading poor first-language readers to read poorly in the foreign language and good first-language readers to read well in the foreign language. This is supported by the notion that poor reading in a foreign language is due to inadequate knowledge of the target language (Alderson 1984:4).

On the other hand, the Linguistic Interdependence Hypothesis suggests that once the child develops reading skills in L1, he or she is able to transfer those skills to L2 (Cummins 1991). Fukkink, Hulstijn, and Simis (2005) indicate that L2 reading performance is primarily a matter of possessing linguistic and strategic knowledge so that a complex interplay exists between linguistic fluency and strategy use. This has been supported by Walczyk (1995) who showed that a lack of linguistic knowledge or fluency can, to some extent, be compensated for by repair strategies that are part of a reader's strategic knowledge. The general consensus is that a combination of these two hypotheses may provide the best explanation for the interaction between L1 and L2 reading processes (see Bernhard & Kamil 1995).

Literature about reading strategies, in both an L1 and L2 context, is voluminous (e.g., Sarig 1987, Taillefer & Pugh 1998, Yamashita 2002b). Although these studies provide

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valuable information concerning the proportion of attention devoted to various types of L1 and L2 strategies, several other dimensions have not been so fully addressed. For example, extensive evidence for lower-level components, such as phonological/orthographic processing, have been found in studies investigating subjects from various L1 linguistic backgrounds (see Sparks *et al.* 2006). A study by Koda (2000) indicated that both L1 and L2 morphological processing experiences promote the development of L2 lexical learning. Wang, Koda and Perfettie (2003) compared word identification between Korean and Chinese EFL learners, with results indicating that Chinese learners relied more on orthographic rather than phonological information. Wang and Geva (2003) suggested that Chinese ESL children relied more on holistic, visual information rather than on a phonological strategy in English spelling.

These findings supported the notion that different information-processing mechanisms may be involved in L2 reading by L1 readers who come from different background orthographies. As Nassaji mentioned, "L1 readers are different from L2 readers not only in terms of their breadth of vocabulary knowledge but also in terms of the totality of lexical representation for each lexical entry in their lexicon" (Nassaji 2006:398). In the reading research literature, a vast majority of the studies examining L1 and L2 reading strategy have focused on languages other than Chinese. Little is known about interaction between English and Mandarin Chinese, which differs from English in various aspects in word formation. For example, Chinese characters contain orthographic, morphological and syllabic information (Leong & Tamaoka 1998). Furthermore, Chinese characters contain both semantic and phonetic radicals. The semantic radicals are associated with the meaning of the character, while the phonetic radicals provide information or cues about the pronunciation of the character (Gottardo *et al.* 2006).

An investigation of learners' English reading skills among native Chinese speakers allows us to examine both specific and common aspects of reading performance. Therefore, the main purpose of the present study was to examine strategy use and lower-level processing skills in the L1 and L2 reading comprehension of Chinese-speaking EFL learners. Accordingly, three specific questions were addressed:

1. What relationship exists among various lower-level processing tasks and reading comprehension in L1 and L2 for Chinese-speaking EFL learners?
2. Do Chinese EFL learners show differences in their strategy use in L1 and L2 reading?
3. What are the relative contributions of strategy use and lower-level processing skills to reading comprehension in L1 and L2?

1. METHOD.

1.1. PARTICIPANTS. Subjects were Chinese-speaking EFL learners at a university in Taiwan. Ages ranged from eighteen to twenty-four. They were drawn from various disciplines in their first, second, or third year of an undergraduate program. All subjects had studied English for at least six years in secondary school and had then taken additional English coursework upon entering the university. The test instruments in this study were administered

to a total of 356 students, with the number of cases remitted for analysis 264. Data from incomplete test instruments were omitted.

1.2. MATERIALS. In order to investigate the contribution of L1 reading comprehension and L2 proficiency to L2 reading comprehension, as well as the interaction of L1 and L2 strategy use in L2 reading among different groups of students, a series of tests were constructed based on Yamashita (2002a), Nassaji (2003), and Taillefer and Pugh (1998).

1.2.1. L2 READING COMPREHENSION. The test of L2 reading comprehension consisted of two parts: an English gap-filling test (cloze) and an English multiple-choice test. In the English gap-filling test, words which were judged to require a global-level understanding of a given passage were deleted. The reading passage (189 words) for the test was taken from an English reading textbook at a freshman level. In all, ten words were deleted. An English multiple-choice test (Section 3 of the TOEFL-reading comprehension) formed the latter part of the L2 reading comprehension test. It was comprised of 15 items, based on three reading passages. Cronbach's alpha for this test was placed at 0.89.

1.2.2. L1 READING COMPREHENSION. The measure of L1 reading comprehension consisted of two parts: a Chinese gap-filling test and a Chinese text comprehension. Two newspaper articles were selected for this test battery. Similar to the English gap-filling test, 25 key words or words relevant to Chinese text comprehension were deleted in the first article. The topic of this article was antiwar ideology in the context of Taiwanese society. The test of L1 text comprehension contained 15 items. A second news article concerned the issue of stem-cell technology. There were 10 multiple-choice questions based on content from the article. This test also reached a high level of reliability (Cronbach's alpha 0.90).

1.2.3. QUESTIONNAIRE ON L2 READING STRATEGIES. A questionnaire was constructed in English to determine subjects' knowledge and use of English reading comprehension strategies. Strategies were divided into five categories: textual content (Q1-8), reader response (Q9-10), concrete techniques (Q11-21), task perception (Q22-25) and local problem-solving techniques (Q26-36). The subjects responded in scales ranging from one-to-five (code 1: strongly disagree; 2: disagree; 3: neither disagree nor agree; 4: agree; 5: strongly agree). This instrument was developed from the questionnaires employed previously by Taillefer and Pugh (1998) and Taraban, Rynearson, and Kerr (2000) with some modifications from this author. There were 36 items in this questionnaire.

1.2.4. QUESTIONNAIRE ON L1 READING STRATEGIES. To measure the subjects' strategies used in L1 reading, the English version of the questionnaire on reading strategies was translated into Chinese. Parallel to the English questionnaire, the questionnaire in Chinese also contained 36 items, classified into five equivalent categories.

1.2.5. L2 LOWER-LEVEL PROCESSING SKILLS. The assessment of L2 lower-level processing skills consisted of three components. An English word recognition contained 20 English

words and 20 nonwords, from orthographically simple words (e.g., *dove* and **nete*) to orthographically more complex words (e.g., *accommodation*, and **ecnouragment*). Participants were asked to read the word list silently and then decide whether each item in the list was an English word or a nonword. For testing English phonological processing skills, we adopted the task used by Nassaji (2003), in which a list of 20 pairs of pseudowords that either sounded the same or different in English (e.g., *waip/wayp* and *lape/laip*) was used. Participants were asked to read and then judge as quickly as possible whether the pronunciation of words in the pairs matched. The measure of orthographic processing was similar to that of Siegel, Share, and Geva (1995). The task contained a list of 20 monosyllabic nonwords (e.g., *filv/filk*, and *tolz/tolb*). Participants had to decide which of the two pair members looked more like a real English word.

1.2.6. LI LOWER-LEVEL PROCESSING SKILLS. The measure of Chinese lower-level processing skills was constructed to parallel the English test. The Chinese word recognition task contained 20 Chinese compound words and 20 nonwords ranging from orthographically simple words (e.g., 內在 'internal'/*新司) to orthographically more complex words (e.g., 臃腫 'fat'/*嶙峋). The task of Chinese phonological processing skills included 15 Chinese compound words (e.g., 詮釋 'interpret') and 15 nonwords which have phonological similarity to Chinese real words (e.g., *怠惰). The task of Chinese orthographic processing consisted of 15 Chinese compound words (e.g., 畏懼 'fear') and 15 nonwords which have orthographical similarity with Chinese real words (e.g., *書卓).

1.3. PROCEDURE. Data were collected in English language classes offered to students at different levels in the undergraduate program. The tasks were divided among three sessions, with each session lasting about 50 minutes, and a 1-week interval between sessions. It was judged unlikely that students could improve their English and Chinese ability to the extent of affecting test results during this short testing period. The questionnaire on reading strategy use in each language was administered directly after the task of reading comprehension in that language. Before the session started, the researcher explained the strategies found in the questionnaire to ensure that participants understood the meanings of those strategies.

1.4. SCORING. Each correct answer scored one point in all of the tests, except in the gap-filling tests. The list of tests with a maximum score is presented in Table 1. Scoring of the gap-filling tests was based upon lists of words considered as semantically acceptable substitutes for the deleted word. These word lists were composed in consultation with a minimum of two native speakers from each language before scoring occurred, and one point was given if the subjects' response was found on the list. In the five-point scaled questionnaire in each language, subjects' responses were registered first. The subjects responded in scales ranging from one-to-five. In order to calculate the number of strategies used by each student, only response 4 (agree) and 5 (strongly agree) were counted as positive use of the strategies involved. The number of strategies asked as part of the questionnaire totaled 36.

Test	Tasks	Maximum score
L1 reading comprehension	Gap-filling test	25
	Multiple-choice questions	10
L2 reading comprehension	Gap-filling test	10
	Multiple-choice questions	15
L1 lower-level processing	Chinese word recognition	40
	Chinese phonological processing	30
	Chinese orthographic processing	30
L2 lower-level processing	English word recognition	40
	English phonological processing	20
	English orthographic processing	20
Questionnaire on L1 reading strategies		36
Questionnaire on L2 reading strategies		36

Table 1. List of tests and maximum scores in each test.

2. RESULTS.

2.1. PERFORMANCE IN LOWER-LEVEL PROCESSING TASKS. The relationship among the component variables in lower-level processing in L1 and L2 reading was explored through a statistical measure of correlation. Pearson correlations for the lower-level processing tasks and reading comprehension in Chinese (L1) and English (L2) are presented in **Table 2** (overleaf). The results show that L1 reading was significantly correlated with all variables except with L2 orthographic processing ($r = .089$). The relationship of L2 reading comprehension with other factors was less obvious in that L2 reading was correlated only with L2 word recognition ($r = 0.171$) and L1 reading comprehension ($r = 0.192$). L2 word recognition was the only variable which was strongly correlated with all other variables.

In order to analyze whether EFL learners with different L2 reading ability show different performance in lower-level processing tasks, the sample ($n = 264$) was divided into two groups considered to contain skilled and less-skilled readers, based on the median split of readers' raw scores on the L2 reading comprehension (Mean = 9.48, SD = 4.89) found in this study. Those who performed above the median (Mdn = 10) were classified as skilled readers with those performing below median classified as less-skilled readers. There were 140 in the skilled group and 124 in the less-skilled group. An ANOVA test was conducted to compare lower-level processing skills in L1 and L2 between skilled and less-skilled learners. The results, shown in **Table 3** (overleaf), revealed that skilled learners performed better than less-skilled learners among all variables in L1 and L2. In L1 the strongest variable is considered to be orthographical processing. In L2 word recognition and orthographical processing in turn were seen as strong indicators differentiating skilled from less-skilled readers.

2.2. THE COMPARISON OF STRATEGY USE IN L1 AND L2. In order to demonstrate whether the participants had different performance in L1 and L2 strategy use, a t-test was computed to compare the means and standard deviation of positive strategy use in each category.

Variable	1	2	3	4	5	6	7	8
1. L1 word recognition	1	.563**	.635**	.360**	.076	.132*	.265**	.084
2. L1 phonological processing	.563**	1	.654**	.393**	.167**	.154**	.201**	.028
3. L1 orthographic processing	.635**	.654**	1	.394**	.092	.161**	.224**	.091
4. L2 word recognition	.360**	.393**	.394**	1	.176**	.175**	.267**	.171**
5. L2 phonological processing	.076	.167**	.092	.176**	1	.225**	.180**	-.015
6. L2 orthographic processing	.132*	.154**	.161**	.175**	.225**	1	.089	.067
7. L1 reading comprehension	.265**	.201**	.224**	.267**	.180**	.089	1	.192**
8. L2 reading comprehension	.084	.028	.091	.171**	-.015	.067	.192**	1

Table 2. Correlations among L1 and L2 lower-level processing tasks and reading comprehension. ** Correlation is significant at the 0.01 level (2-tailed) * Correlation is significant at the 0.05 level (2-tailed).

	Skilled vs. less-skilled learners			
	L1		L2	
	Scheffe's F	Sig.	Scheffe's F	Sig.
Word recognition	5.968	.015*	32.645	.000***
Phonological processing	7.498	.007**	4.169	.042*
Orthographical processing	20.760	.000***	28.293	.000***

Table 3. Comparison of lower-level processing skills in L1 and L2 (ANOVA) between skilled and less-skilled EFL learners. * $p < .05$, ** $p < .01$, *** $p < .001$.

Results are presented in **Table 4**. Results indicated that Chinese subjects used significantly more strategies in four categories (textual content, reader response, concrete technique and problem solving) in performing Chinese reading than in English reading. On the other hand, participants used the strategy of task perception more in English than in Chinese.

2.3. THE RELATIONSHIP BETWEEN STRATEGY USE, LOWER-LEVEL PROCESSING SKILLS AND READING COMPREHENSION IN L1 AND L2. Table 5 provides correlations among variables considered in the study. An examination of correlation patterns among the variables shows that L1 reading strongly correlated with L2 reading ($r = .192$). Lower-level processing skills in L1 were significantly correlated with L1 reading ($r = .270$), but not with L2 reading. On the other hand, lower-level processing skills in L2 were significantly correlated with L1

	L1 (Chinese)		L2 (English)		t
	Mean	SD	Mean	SD	
Textual content	.1352	.06151	.1168	.06666	33.576****
Reader response	.0417	.02258	.0262	.02394	20.936****
Concrete technique	.1606	.07879	.1366	.08468	30.896****
Task perception	.0365	.03039	.0393	.03299	22.832****
Problem-solving	.1511	.08338	.1449	.08863	31.321****
Total	.5210	.21885	.4603	.24873	35.450****

Table 4. Means, standard deviations (SDs) and t values for a number of positive strategy uses in Chinese and English reading. **** $p < .0001$

Variable	1	2	3	4	5	6
1. L1 lower-level processing	1	.349**	.044	.101	.270**	.082
2. L2 lower-level processing	.349**	1	.121*	.147**	.259**	.107*
3. L1 strategy use	.044	.121*	1	.384**	.102	.056
4. L2 strategy use	.101	.147**	.384**	1	.040	.107*
5. L1 reading	.270**	.259**	.102	.040	1	.192**
6. L2 reading	.082	.107*	.056	.107*	.192**	1

Table 5. Correlation between lexical processing tasks, strategy use and reading comprehension in L1 and L2. ** Correlation is significant at the 0.01 level (2-tailed) * Correlation is significant at the 0.05 level (2-tailed).

($r = .259$) and L2 reading ($r = .107$). However, strategy use, both in L1 and L2, did not show a significant correlation with L1 reading. Lower-level processing and strategy use in L2 were correlated with L2 reading ($r = .107$, respectively), but neither lower-level processing nor strategy use in L1 showed a significant correlation with L2 reading.

3. GENERAL DISCUSSION. As shown in **Table 2**, we can say that English word recognition is the most salient variable in Chinese and English reading to be found among all components, since it is the only variable which significantly correlated with all other variables. Comparison between skilled and less-skilled revealed that skilled readers performed better than less-skilled readers among all variables of the lower-level processing tasks. In Chinese, orthographic processing skills showed a higher contribution to the discrimination of skilled from less-skilled readers. On the other hand, in English, both word recognition and orthographical processing seemed to be stronger indicators than phonological processing.

Results demonstrated that participants exhibited more strategy use in the four categories in Chinese reading than in English reading. The only category in which participants used more strategies in English than in Chinese was in task perception. The sampling showed similarity and differences in strategy use between Chinese and English. Both in Chinese and English, the most frequently used strategies were concrete techniques (e.g.,

making inferences, making emotional connection, visualizing, skimming, pushing ahead when encountering a comprehension difficulty, or underlining). However, when we examine strategy use qualitatively, there is a slight difference in the order following the category of concrete techniques. For example, in English the next most frequently used strategies were textual content strategies (e.g., linking information, anticipating, focusing on main ideas, or identifying the organization). This was followed by local problem-solving strategies (e.g., guessing word meaning, comparing the word with L1 or L2, looking for clues, analyzing affixes, analyzing grammar, or translating into L1), task perception (e.g., perception of the importance of the pronunciation or the meaning of each word, or feeling like an efficient reader) and reader response (e.g., learning something new, or response to the text). In Chinese, the second most frequently used strategies were local problem-solving strategies, followed by textual content, reader response and task perception.

Lower-level processing skills and strategy use were significantly correlated in each language. Chinese lower-level processing skills were correlated with English lower-level processing skills and Chinese strategy use was correlated with English strategy use. As displayed in Table 5, the correlation between lexical processing skills in Chinese and English with Chinese reading comprehension was higher than strategy use in both languages. It indicates that the participants were more engaged in lexical processing than in using strategies when they were reading the texts in this study. Therefore, the influence of Chinese and English lower-lexical interaction in Chinese reading may be more than would be expected. In English reading comprehension, the contribution of English lower-level processing skills and strategy use to English reading was higher than that of Chinese counterparts. Chinese lower-level processing skills and strategy use showed no correlation with English reading. It is interesting that English lower-level processing skills showed a significant correlation with Chinese reading, while no relationship was found between Chinese lower-level processing skills and English reading. Nevertheless, a significant correlation between Chinese and English reading comprehension indicates the relationship between L1 reading and L2 reading should still not be ignored.

4. IMPLICATIONS AND CONCLUSION. Based on the findings of the present study, several implications can be drawn for foreign language (FL) reading instruction. First, the present findings suggest that lower-level processing skills have a stronger correlation with both L1 and L2 reading comprehension than with strategy use. This reinforces the findings in other studies to the effect that lower-level word recognition processes play a crucial role, in addition to higher-level processes, even in advanced readers (e.g., Bell & Perfetti 1994, Nassaji 2003). It is also worth noting that the influence of lower-level processes (especially word recognition and phonological processing) from L2 to L1 was stronger than from L1 to L2. One possible explanation may be that reading in English relies heavily on phonological processing, especially at the grapheme-phoneme-correspondence level. By comparison, reading in Chinese requires considerably more effort and complicated visual-orthographic analysis (Wang, Koda & Perfetti 2003:143). Therefore it may be easier to transfer letter-sound mapping skills in English reading to Chinese reading.

Second, the comparison between skilled and less-skilled readers indicates that skilled readers relied more on orthographic information than on phonological information in both L1 and L2 reading. This finding is similar to the study by Wang, Koda, and Perfetti (2003) in which Chinese ESL learners relied less on phonological information and more on orthographic information to identify English words than their Korean counterparts did (p. 129) and it further supports the notion that "different orthographic systems have an impact on cognitive processes in literacy acquisition" (p. 145). These findings may be explained by recent research on Chinese-English bilingual adults (e.g., Liu & Perfetti 2003, Tan *et al.* 2001) showing that reading Chinese actually activated some brain areas in charge of coordinating and integrating visual-spatial analyses of logographic Chinese characters when compared with reading English. Hence, it is beneficial to provide script information in order to facilitate reading in Chinese and English.

Furthermore, it is appropriate to point out that this study is mainly concerned with correlational analysis and therefore gives no evidence of causality. For example, that the results yielded no correlation between strategy use and reading comprehension does not mean that instruction integrating strategy use will not contribute to L2 reading comprehension. Although some researchers believe that students should possess a fluent access to words before they can successfully apply reading strategies in the classroom (Huckin & Coady 1999), numerous studies have since determined that reading comprehension strategies can in fact be taught to students, in order to improve student performance on comprehension and on recall tests (Carrell, Pharis, & Liberto 1989; Oxford & Cohen 1992). In the present study, participants showed similarities and contrasts in strategy use. Both in Chinese and English, the most frequently used strategies were comprised of concrete techniques. To facilitate reading in Chinese and English it is therefore recommended to integrate instruction with strategies such as making inferences, making emotional connection, visualizing, skimming or underlining. To improve English reading, instructors may provide training with textual content strategies, such as linking information, anticipating, focusing on main ideas, or identifying the organization. On the other hand, problem-solving strategies would be helpful to enhance Chinese reading, such as guessing word meaning, comparison with Chinese and English, looking for clues, analyzing affixes, analyzing grammar or translating into Chinese.

In conclusion, the present study showed various degrees of relationship between component variables of reading processes in Chinese and English. Lower-level processing skills demonstrated a stronger correlation with reading comprehension compared to strategy use. Orthographic processing demonstrated a higher contribution to the discrimination between skilled and less-skilled readers both in Chinese and English. Moreover, in English, skilled readers also used more word recognition skills than less-skilled readers. Finally, similarities and differences of strategy use in Chinese and English provided possible pedagogical implications which may be used to enhance reading comprehension in Chinese and English.

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STRAIGHT FROM THE HORSE'S MOUTH: ANIMALS IN FICTION AND THEIR LINGUISTIC WAYS

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TALKING ANIMALS¹ HAVE BEEN A HALLMARK OF MYTH AND FOLKTALES from the earliest times. Beasts speak in Sanskrit fables, Grimm's fairytales, and the Old Testament. They are favorite characters in children's literature, and appear in adult fiction as well.

In literature, animals talk for a variety of reasons. For example, in fable, animal characters display particular human behaviors, including speech, as a means to illustrate particular moral lessons; thus we encounter animals like the sly fox or the clever monkey. In science fiction or fantasy literature, animals may talk because they belong to other worlds or because there are new ways of understanding them. In fiction, animals may talk so they can express an animal's point of view, for example, to generate sympathy for the treatment of animals or to educate readers about nature.

In any genre, animals may use language in ways that are thought-provoking or entertaining. In particular, the interplay between science and fiction has tremendous rhetorical potential, as realized in the genre of science fiction, which considers plausible new worlds and life forms. For example, logical extensions of an animal's communicative capabilities may be smart and funny; Doctor Dolittle's dog Jip, like other dogs, marks questions with a twitch up one side of his nose (Lofting 1920:11). Yet, when talking animals become more naturalistic, their fictional value may be compromised (Cosslett 2006:131).

Moreover, talking animal characters blur or cross traditional boundaries between humans and animals, leading to interesting perspectives on social or philosophical questions. Humans are, of course, a kind of animal. However, language is generally considered to be a uniquely human ability, though animal communication systems and human language may share common properties. Thus, Stephen Anderson reviews the results of animal communication studies across a range of species and finds language unique to humans, and so titles his book *Doctor Dolittle's Delusion* (2004). Animal language represents an excellent opportunity to reflect on the humanity of animals and the bestiality of men.

The linguistic properties of languages used in science fiction texts have been studied in works such as Myra Barnes's *Linguistics and Languages in Science Fiction-Fantasy* (1974), Walter Meyers's *Aliens and Linguists* (1980), and Douglas Coleman's "So you want to communicate with space aliens?" (2008). Tess Cosslett's *Talking Animals in British Children's Fiction* (2006) reviews and analyzes talking animals in mainly 19th-century British children's literature. This paper presents examples of animal language from 18th-, 19th-, and

¹ I am deeply indebted to the *LACUS Forum* reviewers and editorial team for their tremendous help throughout the formulation of this paper.

20th-century fiction from a range of genres to illustrate how particular linguistic choices function at the rhetorical level to provide interesting perspectives on the distinction between science and imagination, humans and animals.

1. THE LINGUISTIC REPRESENTATION OF ANIMAL COMMUNICATION. In some texts, the use of animal language is unremarkable. For example, Richard Bach's *Jonathan Livingston Seagull* (1970) presents a seagull's thoughts and experiences through the voice of its seagull narrator in ordinary English. Anna Sewell's animal autobiography *Black Beauty* (1877), intended for younger readers, is also narrated in a simple style of English, though its original edition includes the note, "Translated from the equine by Anna Sewell" (Cosslett 2006:69).

A distinguishing dialect of English is used for the talking horse in John Taintor Foote's short story, "Old pastures" (1916).² This story describes a conversation between a man returning home to New York and an old cab horse he encounters while waiting for a connecting train in Xenia, Ohio. The man wonders, "drowsily": "Where have I seen a horse marked like that before?" (231). The horse then tells the story of his life, and his unlikely rise to the racing fame that preceded his current dismal state. While his Kentucky trainers are quoted speaking colloquial English, and the speech of the narrator displays no distinctive features, the voice of the old cab horse is strikingly Southern gentleman:

I cherish the hope... that some day I will return to the land from which I sprang. I will see the bluegrass, ankle deep, gray and crisp with dew. I will hear the brood mayehs callin' to the little, little colts, and the stallions stamp and holler in the pad-docks. The little n-ggahs will whistle and shuffle and sing in the sunshine. The old n-ggahs will moan and croon when the moon comes up over the big black bahns. (1916:241)

In choosing a voice for their fictional characters, authors have the opportunity to include features that characterize their identity, a literary technique of realism used in English literature since Chaucer's depiction of regional dialects in quoted speech (Barnes 1971:17–18). Providing literary animals with distinctive dialects offers further possibilities for analogy with human beings, for example, analogy with their social behavior. Thus, Cosslett finds a social hierarchy among cavalry horse, horse, and donkey indicated by their differential speech styles in *Further Adventures of Jemmy Donkey* (1821) (2006:72).³ The genteel and patrician dialect of the old cab horse in 'Old pastures' highlights the incongruousness of his job and presence in Xenia, Ohio. In the story, the man awakens and arranges for the horse to be shipped back to Kentucky to be put out to pasture along the Georgetown Pike.

² Phyllis Rogers of the Keeneland Library, Lexington, Kentucky brought this charming tale and other horse books to my attention. Foote's old cab horse is an interesting illustration of Robert Harris's example of plausibility in fiction: "Animals can talk southern dialect, but then they must behave like human beings—and not like damn Yankees" (1952:8).

³ This hierarchy is given an interesting illumination in *Beautiful Joe* (1901), in which the canine narrator declaims: "I know that I am not a thoroughbred. I am only a cur" (Cosslett 2006:83).

Ernest Thompson Seton's "Raggylug: The Story of a Cottontail Rabbit" (1898), like *Black Beauty*, is identified as a translation. But Seton, a famous naturalist who helped found the Boy Scouts, takes care to explain that the rabbit dialog is an English rendition of animal behavior that is communicative in a variety of non-human modalities:

Truly rabbits have no speech as we understand it, but they have a way of conveying ideas by a system of sounds, signs, scents, whisker-touches, movements, and example that answers the purpose of speech; and it must be remembered that though in telling this story I freely translate from rabbit into English, *I repeat nothing that they did not say.* (70–1, emphasis in original)

In his novel *Watership Down* (2005[1972]), author Richard Adams also uses translation issues to emphasize the animality of the language of his rabbit characters, which he calls 'Lapine'. Lapine words appear in the English text, sometimes with explanatory footnotes, and a glossary is included. Lapine words resemble animal communication in that some of them are intentionally rabbitlike. As Adams explains in his introduction, "some of the invented words were given a kind of wuffy, fluffy sound, for example, *Efrifa* – the sort of noises that rabbits *might* make if they did talk" (xiv). Other Lapine words are onomatopoeic, while others are modeled after Arabic, a foreign language from the perspective of English that also points to the otherness of rabbits.⁴

2. THE PLAUSIBILITY OF ANIMAL LANGUAGE. In *Aliens and Linguists* (1980), Meyers reviews an interesting variety of linguistic situations that occur at 'first contact', the initial meeting of intelligent beings who are previously unaware of the other's existence (86–103). While authors may simply narrate or translate the language of their animal characters, the remarkability of animal language may be overtly recognized in the storyline, because, after all, animals do not talk.

For example, Lewis Carroll's *Alice's Adventures in Wonderland* (1865) describes Alice's first encounter with a talking animal. At the beginning of the story, Alice is feeling "very sleepy", and considering whether to pick daisies,

...when suddenly a White Rabbit with pink eyes ran close by her.

There was nothing so very remarkable in that; nor did Alice think it so very much out of the way to hear the Rabbit say to itself 'O dear! O dear! I shall be too late!' (when she thought it over afterwards, it occurred to her that she ought to have wondered at this, but at the time it all seemed quite natural)... (2)⁵

In Jonathan Swift's *Gulliver's Travels* (1726), the traveler Gulliver finds his normal style of communication with animals to be inappropriate, as pointed out by Ann Kelly (2007:2).

⁴ Richard Adams served in the British Army 1940–46. (Royle n.d.)

⁵ This passage is quoted in the Oxford University Press blog (April 26, 2007) offering the book discussion question: "...why wasn't Alice more startled at seeing a talking animal?" (OUPblog. Oxford University Press USA, http://blog.oup.com/2007/04/alice_animals/).

Entering the country of the *Houyhnhnms*, he encounters a horse of this race. The horse rebuffs Gulliver's attempt to stroke it, "using the common Style and Whistle of Jockies when they are going to handle a strange Horse." The horse responds with a shake of his head, a bent in his brows, and the removal of Gulliver's hand with his forefoot. It neighs three or four times, but Gulliver notices, "in so different a Cadence, that I almost began to think he was speaking to himself in some Language of his own" (Swift 208). Gulliver soon discovers that the *Houyhnhnm* horses do indeed have a language, which he proceeds to learn over the next three years.

3. ARTICULATION OF THE ANIMAL EXPERIENCE. Language is well-known as a vehicle for communicating the human experience, where words and linguistic categories reflect species- and culture-specific experiences of the world.⁶ For example, in her review of Matt Haig's *The Last Family in England*, a novel narrated by a black Labrador, Sonya Hartnett speculates: "The novel's short chapters feel suited to the mentality of a canine, for it seems possible that dogs do perceive the world in bite-size pieces..." (2004:2).

The idea of a species-specific experience underlies Doctor Dolittle's desire to learn shellfish language in Hugh Lofting's *The Voyages of Doctor Dolittle* (1922). The doctor tells his assistant Stubbins that he particularly wants to learn shellfish language because some of the shellfish are "the oldest kind of animals in the world that we know of." He continues, "So I feel quite sure that if I could only get to talk their language, I should be able to learn a whole lot about what the world was like ages and ages and ages ago" (28). This kind of thinking reflects the contemporary linguistic notion that older languages preserve information about previous cultures, a notion often illustrated with the popular examples of 'knife' and 'ceiling' in Basque, an isolate language of Europe, supposed to demonstrate its Stone Age ancestry: 'knife' lit. 'the stone that cuts,' and 'ceiling' lit. 'roof of the cave' (Berlitz 1982:11).

This interplay of natural science and linguistic science is entertaining and begs plausibility. Later, the role of interaction in language acquisition, another topic of linguistic theory, is raised when the doctor succeeds in conversing with a Wiff-Waff snail. As the doctor explains to Stubbins:

[H]e has a language. But it is such a poor language—only a few words, like 'yes' and 'no'—'hot' and 'cold'.... Possibly it is the kind of life he leads. You see, they are very rare now, these Wiff-Waffs—very rare and very solitary. They swim around in the deepest parts of the ocean entirely by themselves—always alone. So I presume they really don't need to talk much. (Lofting 1922:47–8)

Julie Ann Smith (2002) considers the challenge of encoding animal consciousness in her study of John Hawkes's *Sweet William* (1993), a 'memoir' of the horse Sweet William. She

⁶ Coleman (2008) discusses Chomskyan assumptions about human biological specificity for language in his study of alien language examples. Sapir-Whorfian views about the relationship between language and culture in alien languages are discussed in Barnes (1971:115–39, 163–70) and Meyers (1980:158–70).

considers "that the being of Sweet William is communicated not only through his relationships and sensual experiences, but also through his language, which intends to express his individual and non-human consciousness through "a discourse far more cerebral and intricate than most human beings are capable of" (Smith 2002:2). She illustrates with the following passage:

The sweet fuming breath of feed in a bucket, or the dark smell of algae on still water, or the intangible aroma of ripe grain in a field, or the smell of molten iron, or the salty smell of a long wet gash in a horse's shoulder, or the acidic smell of the fear that emanates from the flesh of certain humans in the presence of a hot-blooded horse—all this came to me now like a clear thread thorough the neutral atmosphere, and I sniffed, I savored what I sniffed, vaguely I thought of the eternal cycles of equine life. (*Sweet William*, p. 50, as quoted in Smith 2002:3)

This passage also offers a speculation about animal cognition. Sweet William's ability to consider "the eternal cycles of equine life" can be contrasted with the perception of an "eternal present" that Cosslett finds communicated through the style of the language of the cows in Gordon Stables's *Sable and White* (1894), which she associates with "a strictly limited bovine consciousness": "...nothing is ever, ever, going to happen, and the meadow will never, never, go bare. Summer will never, never end, and the sun will always, always shine" (*Sable and White* p. 62, quoted in Cosslett 2006:72).

Richard Adams's inclusion of Lapine words in *Watership Down* also illustrates a linguistic strategy for encoding animal cognition. For example, the derivation given for the Lapine phrase for 'enemy' offers an explanation of how rabbits think: "Rabbits can count up to four. Any number above four is *hrrair*—'a lot,' or 'a thousand.' Thus they say *U Hrrair* 'The Thousand'—to mean, collectively, all the enemies... of rabbits" (Adams 1972:5).

Edgar Allen Poe's "The Raven" (1845) raises the question of what animals know. In the poem, a lonely man bereft of his love Lenore opens his door on a bleak, dreary night to a raven visitor. He speaks to the raven, but no matter what the question or topic, receives the invariant response, "Nevermore." The man imagines the raven—a bird that can mimic—is only repeating a word he has learned:

'Doubtless,' said I, 'what it utters is its only stock and store
Caught from some unhappy master whom unmerciful Disaster
Followed fast and followed faster till his songs one burden bore—
Till the dirges of his Hope that melancholy burden bore
Of "Never—nevermore."' (1845:112)

The raven's reply is always a possible answer, which increasingly agitates the narrator. When the raven answers that "Nevermore" shall he "Clasp a rare and radiant maiden whom the angels name Lenore," the man must wonder if the raven is right (113). After all, animals have types of knowledge, for example, animal instinct, that humans do not.

Finally, metaphors and unique turns of phrase can be used to emphasize specific animal perspectives. For example, the use of metaphor to create words in animal languages for objects made or controlled by man is a literary technique dating back to the 18th century, e.g., 'fire' as 'The Red Flower' in Rudyard Kipling's *Jungle Book* stories (Cosslett 2006:131). Hawkes's horse Sweet William is brilliant at this kind of expression. In the following passage, he discards a lackluster metaphor of his existence and offers a poetic alternative.

Complainer, laggard, miscreant—these admittedly I am. In a word, Old Horse. But I am not complacent, and the ammonia that rises from the filthy straw in which I stand is not a metaphor.

Spleen is the sustaining lyricism of those unlucky horses consigned at last to the abandoned paddocks of old age. (1993:57)

Of course, animals can effectively communicate their experiences without having their own voice. Readers can come to an intimate understanding of dogs from Jack London's *Call of the Wild* (1903), or horses from Cormack McCarthy's *All the Pretty Horses* (1999). But giving animals language creates a new modality and new possibilities for expression.

4. LANGUAGE AS AN EXPRESSION OF HUMANITY. The theme of language as an identifying characteristic of human beings has been developed in many works of fiction. Anne Rounds (2004) points to the metamorphosis of Gregor in Franz Kafka's *Metamorphosis* (1946[1915]), and Io in Ovid's *Metamorphoses* (1983) as illustrative of the loss of humanity entailed by the loss of voice. The salesman Gregor's voice is shown in transition as he more fully becomes a cockroach, beginning with the presence of a whirring undertone beneath his words and ending with the recognition of his voice as "an animal's voice" (Rounds 2004:1–2). Io, who is changed into a heifer by Jove, begins to low, though she is able to write her name to communicate her identity to her family. In this vein, giving animals a voice with which to express themselves invites analogy with others whose voices have not been heard. For example, Cosslett points out similarities between animal autobiography and slave narrative (2006:65). The language of slaves is a sign of their dehumanization: Their narratives communicate an animal's view of the world.

Language as a defining feature of human beings has been a central issue in a variety of religious, philosophical, and scientific debates about such topics as anthropomorphism, man's place in a divine order of species, the relationship between nature and nurture, the significance of reason, and evolution. The contribution of talking animals in literature to such debates of the 19th century is detailed in Cosslett 2006, while Kelly 2007 considers the significance of Jonathan Swift's *Houyhnhnm* horses in particular to intellectual debates of the 18th century.

In *Gulliver's Travels* (1726), characteristics of the *Houyhnhnm* language present the *Houyhnhnm* horses as more civilized than their *Yahoo* neighbors, who are human. In this section, we find no *Yahoo* dialog, while the *Houyhnhnm* excel at poetry and deliberate in council. Swift also contrasts man and beast through examples of *Houyhnhnm* expressions, or their absence. For example, the *Houyhnhnm* do not have words for various crimes and

vices, implying that such acts are unknown in their society. The epithet *Yahoo* is used to coin words that denote evil, e.g., *Ynholmhnmrohlnw Yahoo* 'an ill-contrived House' (253).

In Swift's time, intellectuals were debating the role of reason in defining man, while language was considered an expression of reason (Kelly 2007:2). The depiction of the *Houyhnhnm* as reasonable creatures is developed using linguistic means. For example, Gulliver has difficulty making his *Houyhnhnm* host understand the word 'opinion', since, "Reason taught us to affirm or deny only where we are certain" (246). In the *Houyhnhnm* language, a word for 'exhortation' is used to express the idea of 'decree', as the *Houyhnhnm* have "no Conception how a Rational Creature can be compelled, but only advised, or exhorted, because no Person can disobey Reason, without giving up his Claim to be a Rational Creature" (257). Of course, failing to possess a non-rational concept does not make a society more rational than one which has it, but a contrast invites speculation.

Finally, anthropomorphic animals generate empathy and sympathy, drawing attention to animal rights and conservation issues. This is interesting from the viewpoint of science because emotion has been attributed to animals. Charles Darwin observes in *The Descent of Man* (1871): "Most of the more complex emotions are common to the higher animals and ourselves" (p. 305, quoted in Cosslett 2006:145). While the capacity of animals to feel and suffer may be expressed by the content of the sad stories they tell, their inner state may also be communicated through the linguistic features of their speech. For example, the boy Mowgli in Rudyard Kipling's *The Second Jungle Book* (1895) considers a real or imagined duplicity based in part on the vocal style of the panther Bagheera, but also on the possibility of ambiguous words and irony in the language of animals:

'Indeed, yes; I hear, Man-cub ... We be surely the Masters of the Jungle! Who is so strong as Mowgli? Who so wise?' There was a curious drawl in the voice that made Mowgli turn to see whether by any chance the Black Panther were making fun of him, for the Jungle is full of words that sound like one thing, but mean another. (265–66, quoted in Cosslett 2006:134)

5. CONCLUSION. Countless years since the first mollusk emerged and the caveman described his home, millennia since the Old Testament was codified with its divine order and talking serpent, and centuries since Darwin's *On the Origin of Species*, scientific and other intellectual debates continue on the relationship between language and man, man and animal. The different possibilities can be explored in the world of fiction. While science fiction can imagine the voices of plants, Martians, monsters, or machines, though their languages still tend to follow human models, the task of developing animal languages is, in some respects, more guided. We know that rabbits have whiskers and ravens can mimic, for example, and scientific investigations have provided insights into how animals really think, feel, and communicate.

Yet there is still much room for creativity as animal languages are developed based on different assumptions for different intentions. For example, Charles Kingsley develops a language for his "happy stupid" sea snails in *The Water Babies* (1893) that Cosslett evaluates as indicative of a limited intelligence (2006:119):

Whence we come we know not; and whither we are going, who can tell? We float out our life in the mid-ocean, with the warm sunshine above our heads, and the warm gulf-stream below; and that is enough for us. (140, quoted in Cosslett 2006:119)

However, Doctor Dolittle's sea snails are comparatively smart because their language follows from linguistic principles. Kingsley's snails belong to the chorus, while Lofting's Wiff-Waffs make readers laugh and linguists wonder.

Moreover, creativity can build on the complex analogies possible when humans are like animals and communication is like language. For example, in science fiction texts, an emotionless voice may be indicative of a loss of human identity, as when humans become more mechanical (Meyers 1980:47). Similarly, speech is used in talking animal literature to distinguish working animals—who deserve humane treatment—from machines (Cosslett 2006:73). The rich range of rhetorical possibilities offered by linguistic choices make the talking animal a fascinating fictional character.

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PROSODIC OPTIONS FOR ALICE AND THE CATERPILLAR

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THE PRIMARY PURPOSE OF THIS ARTICLE is for its readers to learn to recognize and control pitch patterns and become aware of their *differences* in meaning. To this end it offers much practical exercise supported by a Quicktime video and mp3 audio of a (2-minute) reading from *Alice in Wonderland*, here divided into 17 lines for convenience. These recordings will be available free from www.linguavox.nl until 2010, thereafter from the author. The secondary purpose of this article is to further investigate the meanings in question and also rhythmic phenomena. The first 13 lines of the author's reading¹ alternate (by kind permission of EMI/Music For Pleasure) with those recorded in 1980 by the popular British actor and TV personality Willy Rushton (1937–1996).

Since the 1950s, Dwight Bolinger has consistently argued that *intonation* is determined directly by meaning rather than indirectly through syntax, famously in Bolinger (1972). In that FORM↔MEANING approach, 'pitch-accent' always meant 'highlighting' the word/concept concerned and vice versa. Or, as I would put it: the linguistic SIGN T(onic) has the FORM up/downward pitch-jump and the MEANING 'rejecting alternatives', i.e. 'contrast, new'. If we now include stressing or *rhythm* as well, one arrives at about 18 'prosodic' SIGNS (for British English), each with a FORM and a MEANING.

1. THE EIGHTEEN PROSODIC SIGNS. **Table 1** (overleaf) surveys and defines this whole set. Column 2 shows the SIGNS, column 3 their FORMS, column 4 their MEANINGS. In the *Alice and the Caterpillar* readings to follow the FORMS are represented in a (refined) dots-and-dashes notation or, more conveniently, *within* the text by the 'tonetic stress-marks' in column 1 of Table 1, as originally developed in Kingdon (1958).

The last and fifth horizontal block of **Table 1** shows a subdivision of Tonics into those taking +/–/=/× tone. This corresponds to the distinction made in the British literature between high falling, low falling, high rising and rising-falling tones.

Block 1 accounts for a SIGN hierarchy of words making up bytes (rhythm-groups) making up pieces (tonegroups) making up locutions (breathgroups).

Block 2 presents major F/R and minor (without Tonics) f/r tunes within the domain 'piece', corresponding to Armstrong and Ward's (1926) falling and rising tunes I and II, respectively. The C SIGN in the same block accounts for so-called 'calling tunes', i.e. the fact that *any* (!) F or R piece may also be proclaimed or called out.

Block 3 distinguishes between the SIGNS L(ate), E(arly), P(re) nuclear Tonic and (non-tonic) S(trong stress) in the 'byte' domain, each of course with its own meaning.

¹ Regarding the author's decision to include his own reading, see section 3.1

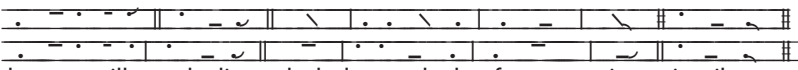
symbol	SIGN	form	meaning
(space)	word	close juncture phonetic entity	<i>concept</i> /referent = nc (neurocognitive) conceptual node activation
	byte	rhythm-group (hierarchy), one S/T, ralentando 1	<i>thought</i> = neural-cum-physical grouping/pointing gesture
//	piece	melodic group (F/f or R/r tune), ralentando 2	<i>idea</i> /sense-group: constellation of thoughts = 2-5 sec. nc loop
#	locution	breath-group, ralentando 3	<i>sententia</i> : constellation of ideas = nc (neurocogn.) loop of loops
˘ ˘	F/f piece	having major/minor falling tune	<i>and nothing else in mind, closed</i> = nc blocking of other loops
˙ ˙	R/r piece	having major/minor rising tune	<i>NOT and nothing else, open</i> = without nc blockings
ˉ ˉ	C piece	chanted level-ending F or R piece (calling pattern)	<i>proclaimed confirmation</i> : rou-tine re-activation of nc loop
	L byte	having Late Tonic on L word/ syllable	<i>creates/introduces</i> thought, hence new idea/context
	E byte	having Early T on E word/ syllable	<i>discovers/reveals</i> thought within following S-thought(s)/context
	P byte	having Pre-tonic on P word/ syllable	<i>selects</i> thought to operate within following newer choice(s)
ˉ ˉ	S byte	having (non-tonic) Strong stress on S word/syllable	<i>specifies/names/identifies</i> existing thought (not new/contrastive)
˙ ˙	M word	having Medium stress, but no S or T	<i>sub-specifies</i> sub-thought/byte within byte
	u word	unstressed/suppressed: z(ero) or automatic w(eak) stress only	<i>mentions/refers</i> to given/automatic reflex concept
˙ ˙	w word	u-word chosen for w-stress	<i>favoured</i> u-word, sub-sub specifying byte in byte in byte
˘	+T word	having +tone: upjump+fall on Tonic syllable	<i>committed</i> , 'un-obvious', neutral choice (i.e. new, contrastive)
˘	-T word	having -tone: downward jump on T syllable	<i>obvious</i> , expectable, accepted, (new) choice
˙	=T word	having =tone: upward jump only, on T syllable	<i>uncommitted</i> , equivalent, random (new) choice
˙	xT word	having xtone: downjump on T syllable, then rising-falling	<i>unique</i> (new) choice

Table 1. The 18 signs accounting for rhythmic and intonational choices. (Range: the bigger/smaller the pitch-jump, the more/less committed/obvious/random/unique the choice.)

Block 4 allows for three more stress SIGNS in the non-S/T word domain, making *four* degrees of stress in all: S(trong), M(edium) and u(nstressed) subdivided into z(ero) and w(eak), instead of the usual *three* degrees Primary, Secondary and unstressed.

All this will be further explained and discussed in Section 2.

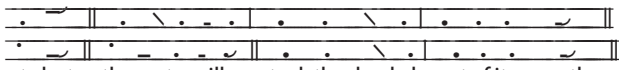
2. TWO READINGS OF A PASSAGE FROM ALICE AND THE CATERPILLAR

- (1) B. u L= ^R// u L- ^R// P+ | u P+ | u S | L+ ^F# u L- ^F#
 theːcaterːpillarː//andːaliceː//ˌlooked|at eaːchother|for ˌsome|ˌtimeː//in ˌsilenceː#

 R. theːcaterːpillar|andːaliceː//ˌlooked|at eaːchother|for ˌsome|ˌtimeː//in ˌsilenceː#
 u P= | u L- ^R// P= | u P- | u P= | L- ^R// u L- ^F#

The three notations for either reading B(uuren) or R(ushton) are *equivalent*. The ‘alphabetic’ notation is in terms of the SIGNS in column 2 of **Table 1**. The *equivalent* dots-and-dashes notation graphically expresses the FORMS in column 3. The *equivalent* in-line notation is with the ‘tonetic stress-marks’ in column 1 of **Table 1**. This in-line notation therefore suffices: the other two are given here merely to show the connections and to help the reader *pronounce* the examples for herself. From example (6) onwards the dots-and-dashes notation will indeed be omitted.

Readers who still find it difficult to manage pitch patterns are advised to first practice humming on the sound [m]: *do-re-mi-fa-so-la-ti-do* and *do-ti-la-so-fa-mi-re-do*, first slowly, then faster. Their next step would be to ‘hum’, within the same pitch range, our dots-and-dashes notations, before finally putting the words to their hummings.

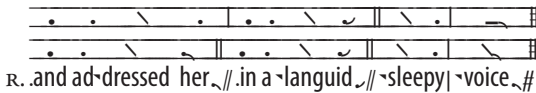
Note the subtle differences between (1)B and (1)R in unit-division, tone, and tune, hence in sign-structure, hence in neurocognitive processing, hence in meaning.

- (2) B. at ˌlastː// theːcaterːpillar|ˌtook theːhookah|ˌout of its ˌmouthː//

 R. at ˌlastː// theːcaterːpillarː//ˌtook theːhookah|ˌout of its ˌmouthː//

Again, it may help to hum (or whistle!) both melodies before adding the words to them.

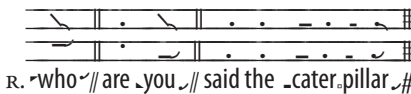
Reading (2)B has at ˌlastː// a Rising piece uL= ^R// consisting of one L= byte consisting of a u-word and an =Tonic word. Meaning: equivalent introduction (u)L= of an ‘open’ (i.e. not nothing-else) idea. This is contained *within* or encased *into* theːcaterːpillar|~ a P+ byte consisting of a u-word and a +Tonic word, meaning: expectable/obvious selection/thought *into/within...* Rushton’s reading at ˌlastː// theːcaterːpillarː// uL- ^R// uL- ^R// has a Rising piece uL- ^R// consisting of an L- byte consisting of a u-word and a -Tonic word, meaning expectable open introduction *into..., into...* Our term *into* is process-anticipatory, *within* product-retrospective.

- (3) B. and ad-dressed her |.in a -languid- // -sleepy| -voice-#



Here too, the similarities are more striking than the differences. Reading (3)B -sleepy| -voice-# E+|S'## ends in an S-thought *voice* already activated or 'in mind'. This not-new, existing context is preceded by the E+ byte *sleepy* revealing, with commitment, an attribute of that voice. In reading (3)R -sleepy| -voice-# P+|L+^f## *voice* is a new thought or introduction, chosen with commitment. The preceding P+ byte *sleepy* is a committed selection among the possible attributes of this voice. Another small difference is the structuring into two (open, closed) versus three (closed, open, closed) pieces or ideas.

- (4) B. -who- // are -you- // said the -cater.pillar-#

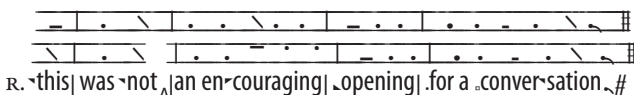


Both locutions/sententias (4)B and (4)R are constellations of three pieces/ideas. When pronouncing them one feels (4)B points up the caterpillar's 'sternness', (4)R sounding much friendlier, its 'languidness'. The upward jump at the beginning is of course from the breathing or resting position of the larynx (or an imagined and preceding it).

Reading (4)B -who- // are -you- // L+^f // u L+^f // is a committed introduction of a query re identifier *who* and nothing else; into a committed introduction of a relationship *are you* consisting of a given automatic reflex relator *are* within a committed choice of an identified/carrier *you*, and nothing else. Reading (4)R -who- // are -you- // L=^R // uL=^R // is an equivalent/uncommitted introduction of *who* and not-nothing-else or open, into an expectable introduction of a relationship *are you*, consisting of given *are* and expectable choice of *you*, other ideas not excluded.

As can be seen, we are still experimenting, indeed struggling, with the semantic statement. A hearer's neurocognitive processing *must* be largely serial as the input is serial, although it seems likely that she (hierarchically) processes bytes (subproducts) rather than word for word. This seems to tally with the idea of neural 'loops', and loops within loops, whereby the first word in a piece is still 'present' at the end (Fraisie 1974). In spontaneous speech (as opposed to reading aloud) the productive process also seems largely serial, from byte/thought to byte/thought, witness hesitations, misfires, and often not knowing how one's *sententias* will end. Top-down 'immediate constituent' processing, frequently taken for granted, just seems impossible except perhaps for not-too-difficult written sentences. These seem *fundamental* linguistic questions crying out for prosodic and neurocognitive research.

- (5) B. -this | was -not | an en-couraging | -opening |. for a -con-ver-sation-#



Reading (5)_B ~was ~not| an en~couraging| ~opening|~ uP+| uP+| S| may be analyzed as a committed selection (*was*) *not*, into a committed selection (*was not an*) *encouraging*, into a specification (*was not an encouraging*) *opening* into... Reading (5)_R ~was ~not ~| an en~couraging| ~opening|~ uP+ ~| uP=| P~| is a committed selection of (*was*) *not*, into a neutral/committed selection of *an encouraging* among attributes, within an expectable selection of *opening* among the various features of conversations, into...

In the mp3 recording, Rushton's *not*, followed by a silence, sounds quite definite and final. Since it is not the end of a locution/sententia, however, I have preferred to indicate the (significant!) pause by an ad hoc caret mark rather than a locution boundary.

In P-bytes only, =tone sounds rather neutral/committed like +tone; indeed + and = may be considered neutralized in this position. The w(eak) stress in ~pening|.for a~ is on the rhythmic principle: no more than two weaker between stronger stresses and no more than one before/after #. It is 'favored' because it is not on the preceding syllable.

- (6) B. ~alice| re~plied| ~rather| ~shyly ~|| i ~| ~hardly| ~know ~|| ~sir ~|| ~just| at ~present ~||
 R. ~alice| re~plied ~|| ~rather| ~shyly ~|| i ~| ~hardly| ~know ~|| ~sir ~|| ~just| at ~present ~||

Again, the two readings P+| S| S| L+^R || uP~| L+^F || S' || S| uS' || and P=| L~^R || S| L+^R || uP~| L+^F || S' || S| uL+^R || are remarkably similar, suggesting similar *but not identical* neurocognitive/syntactic processes in both readers' brains. One difference is in the status of *replied*, treated in (6B) as an S-specified already activated concept (in the 'shyly' context), in (6R) as an L~ expectable open new idea. Another is in *just at present*, treated in my reading as a minor, lower case r-tune, i.e. without any tonic or new choices, in Rushton's as a major R-tune introducing a new idea and thereby a new context.

- (7) B. at ~least| i ~know| who i ~was| .when i got ~up| this ~morning ~|| .but i ~think| i ~must| have been
 ~changed| ~several| ~times | since ~then ~#
 R. at ~least| i ~know| ~who| ~i| ~was ~|| .when i got up| this ~morning ~|| .but i ~think| i ~must| have
 been ~changed ~|| ~several| ~times ~|| since ~then ~#

In this line reader B(uuren) gives a 'committed choice' +tone to *up* and a 'Specified-not-new' S-stress to *morning*. Reader R(ushton) has a 'committed introduction' L+ tonic on *morning* and *when I got up* is also rhythmically different, having 'given' u-stressed *up* and 'new' tonic *got*. Also observe that Rushton twice uses the (much ignored) 'upward jump and staying up' =F tune in ~several| ~times ~|| since ~then ~# P+| L=^F || uL=^F #. This 'equivalent/uncommitted/random idea and nothing else' =F tune is often naturally accompanied by a helpless upward gesture of the hand(s). My Quicktime video specifically tries to demonstrate this 'gesturing' aspect of prosody.

- (8) B. what ~do you| ~mean| by ~that ~|| said the ~cater.pillar ~|| ~sternly ~|| ex~plain| your ~self ~#
 R. ~what| do you ~mean| by ~that ~|| said the ~cater.pillar ~|| ~sternly ~|| ex~plain| your ~self ~#

Reading (8)_R *explain yourself* takes an E+|S^{CF} .N.T.== calling pattern, commonly heard also in *behave yourself*, *dinner time*, *baker street* and (with P=|L-^{CF} pattern) *waterloo bridge*, *national westminster*, *dinner's ready*. C-meaning: proclaimed confirmation of prediction/expectation. Reader B has a C-pattern in line (13).

Reading (8)_B *what do you mean by that* || uP-u|E-|uS^F || has an expectable selection of *do* into: expectable revelation of *mean* into: existing context of saying 'that', and nothing else. Reproducing it, the reader will feel it is more "sternly" reproachful than reading (8)_R P=|uuS|uL-^R || with a neutral selection of *what* into: specified pre-activated (*do you*) *mean* into: expectable introduction of using 'that', alternatives open.

- (9) B. i 'can't|ex-plain|my-self || -sir || said -alice || be-cause i'm 'not|my-self || you -see ||
 R. i 'can't|ex-plain|~my|_self || i'm a -fraid|_sir || said -alice || be-cause i'm _not|my-self || you
 -see ||

Lewis Carroll's intriguing word-play on the (semi-)reflexive pronoun *myself*, is given quite different treatments and interpretations by the two readers.

Reading (9)_B seems to present the L+ committed introduction *myself* first as an object noun, a physical entity, i.e. 'my own person', rather than as an emphatic reflexive in apposition to *I*, and subsequently, by presenting *myself* as an S-Specified-not-new concept/thought already in mind, as that same physical entity. Reading (9)_R, even more mystifyingly, first presents it as an E+ committed revelation *my* as attribute of the following S-Specified already activated concept of *self* or *person*, and then as an L- expectable introduction of a reflexive *myself*. All most intriguing, as indeed it should be.

Note the very British sequences of 'obvious/expectable' -tones in Reading (9)_R i 'can't|ex-plain and be-cause i'm _not|my-self ||, useful for irony and understatement. Here, as elsewhere, the syllable before a downward jump may have to be raised a little.

- (10) B. 'i|_don't|_see || said the -cater-pillar ||
 R. i 'don't|_see || said the -cater-pillar ||

The first reading again seems to bring out the Caterpillar's 'sternness', the second its languidness. (10)_B 'i|_don't|_see || P=|E-|S^F || has a committed selection of *I* into an expectable revelation of *don't* within an already activated thought or context of *seeing* or *understanding*, blocking off any other ideas. Reading (10)_R i 'don't|_see || uP=|L-^R || has reflex/given *I* within a committed selection *I don't* within/into an expectable (re-)introduction of *seeing* versus whatever, not excluding other ideas.

- (11) B. i'm a -fraid|i 'can't|_put it|_more|_clearly || -alice|re-plied || ~very|po-litely || .for i 'can't|
 _under-stand it|my-self ~|| to be-gin ~with ||
 R. i'm a -fraid|i 'can't|_put it|_more|_clearly || -alice|re-plied || ~very|po-litely || .for i 'can't|
 _under-stand it|my-self|to be-gin ~with ||

The Rushton reading .for iˈcæn't| ˌʌndəˌstaɪnd it| myˌsɛlf| to beˈɡɪn ˌwɪθˌ# uuP+| Su| S| uL+M^F# is one piece or idea, introducing the new thought or context of the *beginning* or *cause* of the problem. Reading (11)_B .for iˈcæn't| ˌʌndəˌstaɪnd it| myˌsɛlf~// to beˈɡɪn ˌwɪθ~# uuP+| Su| L=F// uL=M^F# has two high-ending equivalent/uncommitted/random and nothing else =F tunes/pieces/ideas, already observed in (7)_R, both accompanied by 'helpless' upward gestures of the hands (and eyebrows!) in the video recording. This suggests (see also 3.4 below) that prosody is merely the *vocal* part of gesturing.

- (12) B. and ˌbiːɪŋ| ˌsɒmən| ˌdɪfərənt| ˌsaɪz| ˌɪn| a ˌdeɪ ˌ// is ˌvɛrɪ| cɒnˌfjuːzɪŋˌ#
 R. and ˌbiːɪŋ| ˌso ˌmænɪ| ˌdɪfərənt| ˌsaɪz| ˌɪn| a ˌdeɪ ˌ// is ˌvɛrɪ| cɒnˌfjuːzɪŋˌ#

Both readings happen to have a series of committed +bytes/thoughts (even including *in*) to express the unexpectedness of each of them. In many contexts this might have a button-holding effect. One alternative reading to (12)_B and ˌbiːɪŋ| ˌsɒmən| ˌdɪfərənt| ˌsaɪz| ˌɪn| a ˌdeɪ ˌ// uuP+| P+| P+| P+| P+| uL+R# would be and ˌbiːɪŋ ˌsɒmən| ˌdɪfərənt| ˌsaɪz| ˌɪn a ˌdeɪ ˌ// uwP+| E+| S| uuS^R#; given reflex u-word *and* into favoured reflex w-word *being* within committed selection of P+ word/byte (*and being*) *somany*, within/into committed revelation of E+ *different* into Specified *sizes* into given *in* within given *a* within Specified word/byte (*in a day*, and not nothing else or open.

Note the different treatments of *so many* in the two readings: one *Suu* word versus one two-word SM byte/compound. The caret ˆ in reading (12)_R is an ad hoc mark for the (very common and meaningful) 'suspense' pause.

- (13) B. ˌtɪ ˌsnt ˌ// said the ˌkætərˌpɪlərˌ#
 R. ɪt ˌɪsn't ˌ// said the ˌkætərˌpɪlərˌ#


Unfortunately, this is the last line in the slightly abridged version read by Rushton. His ɪsn't ˌ// uL~R# obvious/expectable denial sounds rather 'reasonable', the not-nothing-else Rising tune leaving it open to alternative ideas or arguments. Reader B thought this was a good point to demonstrate a calling pattern as in (8)_R with appropriate 'end of argument' hand gestures – see the video. Children arguing sometimes end up repeating ˌtɪ ˌɪsˌ# ˌtɪ ˌsntˌ# L+M^{CF}# to each other, i.e. committed confirmations of predicted new context with sub-context, and nothing else. Note that 'called' monosyllables like *'tis*, *yes*, *dad*, *come*, *bye* split up into two mental-cum-physical 'gestures' or Strong+Medium-stressed syllables, as in ˌye ˌesˌ# ˌmu ˌʌmˌ#. In dissyllables like *'tisnt*, *mummy*, *coming*, *dinner* this M stress goes to the second syllable, making that a subthought.

- (14) B. ˌwɛl pərˌhæps| ˌjuː| ˌhævən't ˌfaʊnd ɪt| ˌso| ˌjət ˌ// said ˌaɪs| but ˌwɛn| ˌjuː ˌhæv ˌtə ˌtɜːn|
 ˌɪntə ˌa ˌkrɪsəˌlɪs ˌ// (ˌjuː ˌwɪl| ˌsəmeɪ ˌdeɪ ˌ// ˌjuː ˌnəʊ ˌ//) and ˌθɛn| ˌɑːfər| ˌθæt| ˌɪntə ˌa ˌbʊtərˌflaɪ ˌ// ˌɪ| ˌʃʊld ˌθɪŋk| ˌjuː| ˌl| ˌfiːl| ˌa ˌlɪtəl ˌkwiːər ˌ// ˌwɒn't ˌjuː ˌ//

In the video/audio recording (14)_B is said as a single locution, in one breath. Even so, *ˌjuː ˌwɪl| ˌsəmeɪ ˌdeɪ ˌ// ˌjuː ˌnəʊ ˌ//*, said lower and softer, sounds like a parenthesis within this

location. It seems on a par with 'asides' like (.i could ~do| with a ~drink ~|| you ~know ~#) or (~shut| the ~door ~|| ~please ~#), i.e. 'parellel' rather than constituent processes. Although opposed to brackets in the notation, here we seem to have no alternative.

Text-interpretation of: (you ~will| ~some| ~day ~|| you ~know ~#) (uE+| S| S^F|| uS'##): 'aside': automatic reflex activation of *you* into committed revelation of prediction *you will* into 'pre-activated' zero-specified process/idea into specified/not-new identifier *some* into/within not-new time-span *day*, and nothing else, into: given person *you* into/within specified mental activity *you know*, and not nothing else.

(15) B. ~not| a ~bit ~|| said the ~cater~pillar ~#  P-| uL= ^F|| uUS'##

This is the fifth instance of the =F upward-jump high-ending equivalent/uncommitted/random and-nothing-else tune/piece/idea after those in (7)_R and (11)_B, again accompanied by a 'helpless' upward gesture of the hand(s) in the demonstration video. This is then continued and 'echoed' in the following minor or lower case f-tune. The scornful effect of the =F ending is increased by the obvious/expectable selection of *not*, the more so as the *range* (see Table 1) of the downward pitch-jump is increased, in this instance audibly combined with a contemptuous chuckle to round it off.

The =F ending, a 'neutral' pattern in Northern, Scottish and Irish forms of English, is not, or hardly, supposed to occur in Southern British English. However, both readers employ it here to achieve certain semantic effects and it can frequently be heard also in informal speech from other Southern English speakers to convey a 'who cares' sentiment. I seem to have heard it from U.S. speakers as well. Interestingly, the same pattern is spreading in Dutch (even to news-readers!), its meaning now varying between 'uncommitted, careless' for older to 'informal, trendy', for younger speakers, a divide not unlike the regional one in Britain. Although most prosodic choices seem universal, their phonetic and semantic correlates appear to vary somewhat in different cultures.

(16) B. ~well| per~haps| ~your| ~feelings| ~may be ~diffe.rent ~|| said ~alice ~# ~all| ~i| ~know ~|| ~is| it would ~feel| ~very| ~queer| to ~me ~#

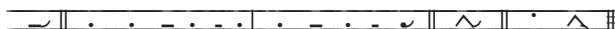
Still experimenting with the semantic statement, I may perhaps suggest something like the following rather cumbersome wheels-within-wheels formulation. Considering the feedforward-feedforward operations suggested in Hawkins' (2004:107ff) chapter on "*How the cortex works*", one could well imagine a corresponding loops-within-loops neurocognitive process in: ~well| per~haps| ~your| ~feelings| ~may be ~diffe.rent ~|| P+| S| P+| S| uuL+ ^F##, thus: committed selection *well* from truth judgment-comments within/into specified supposition *well perhaps* into committed selection of 'ownership' *well perhaps your* into specified mental state *well perhaps your feelings* into *well perhaps your feelings may be different*, the last byte/thought with given modality *may* within given relator *be* within committed introduction of similarity (to unstated/implied *my* feelings) *different*, and nothing else. Rather than the traditional view of an initial theme or topic with the rest of the clause or sentence acting as

a single rheme or comment, respectively, this suggests a temporal-hierarchical organisation somewhat like (((topic comment) comment) comment) comment...

Also compare P+| S|... 'well|per_haps|... with uP-|... 'well per_haps|... in (14B), in which the truth judgment-comment *well* is a reflex automatically given concept.

The w(eak) stress in 'diffe.rent is again on the Rhythmic Alternation Principle (RAP), explained under line (5).

(17) B. 'you_// said the _cater.pillar| con.temptuous.ly_// 'who_// are 'you_#



Here we find the first and only two examples of the exclusive xtone, first in a Rising tune, therefore with a rise-fall-rise in pitch on *who*, then in a Falling tune, with a rise-fall on *you*. Being more difficult to reproduce than the other tones, it may again be helpful to first hum or whistle the accompanying dots-and-dashes notation.

'who_// are 'you_# Lx^R|+ uLx^F# exclusive introduction of personal identity/identifier query *who* into not-nothing-else piece/idea *who exclusively* into: given reflex relationship concept *are* in exclusive introduction of given relationship to identified person *who are you* in and-nothing-else locution/sententia.

The typically British xtone is associated with such things as story-telling to children, 'feminine' gossiping, theatricality. A typical accompanying gesture (shown in the video) seems an up-sideways out-down-in circular movement of the hand(s).

3. SOME CONCLUDING REMARKS

1. Further to the footnote concerning the author's own reading of the story beside Willy Rushton's: it is sometimes suggested that the English of a (bilingual) Dutch national simply cannot be authentic. I disagree. If so, that would also rule out all bilingual Welsh, French Canadian or Xhosa speakers (with or without traces of their other language), anyone who went to live in an English-speaking country after the age of two and indeed many native speakers who over the years adapted their speech to changing circumstances. All I can say is: let the audio/video recordings speak for themselves. Like all scientific data, these are meant to help anyone wishing to falsify or find fault with an author's claims. On a more mundane level, it is especially for reasons of copyright and non-availability of suitable audio and video recordings that one has to rely on one's own material, at least to start with.
2. The above FORM↔MEANING approach to two readings of a short passage from Alice in Wonderland is a follow-up to our three previous LACUS papers on the prosody of GB (General British) English, in particular Van Buuren (2006). It attempts a full account and demonstration of all prosodic options and their motivations = meanings. This two-minute story was preferred to a recording of spontaneous speech *inter alia* for its prosodic 'potential' within this duration and the possibility of comparing it with readings of the same text by other persons and oneself.

3. On a practical level, this article can be seen as an exercise in analyzing by ear rhythm and pitch in speech and reproducing the patterns accurately and also as an exercise in text interpretation, both written and spoken. It is hoped that language and literature teachers may find this useful. The inline notation could be of some use to poets and playwrights wishing to insert 'stage-directions' and to actors, newsreaders, etc., preparing their texts.
4. On a more theoretical level: by considering phonetic, semantic *and* visual phenomena we seemed to find direct links between vocal, neural and physical 'gesturing'. If correct, that would have some interesting implications. It would indicate that much of prosody is evolutionarily pre-linguistic, therefore pre-syntactic and 'universal', indeed 'part of a gestural complex whose primitive and still surviving function is the signaling of emotion' (Bolinger 1985:195). The theme of the 34th LACUS Forum, 'Speech and Beyond', also brings to mind Frans de Waal's (2005) *Our Inner Ape: the best and worst of human nature*, in particular the emotions and gesturings our species has in common with other primates. Detailed analyses of the visual, vocal and neural gesturing of spoken language as attempted here might indeed contribute a little to the new neurocognitive linguistics (Lamb 1999) and thereby to neuroscience in general.
5. This paper made some detailed comparisons of different readings of written English, taking the form and meaning of their prosodic structures as its point of departure. In addition we experimented with stating the temporal-hierarchical semantics of any locution on the lines of topic+comment becoming the topic for a following comment becoming the topic for a following..., etc. It is hoped to integrate this in due course with discourse-based and other approaches to text interpretation.
6. One objection to this (and all other!) prosodic theories is that the choices are treated as discrete, when in fact it can occasionally be difficult (for a hearer if not for a speaker) to decide between piece or locution, byte or piece, S or T, +tone or =tone, etc., for instance in Rushton's recording. However, to present all such oppositions as matters of more/less rather than either/or might do more harm than good at this stage.
7. For reasons of space, the difficult and much-neglected area of *rhythm* (rather than 'stress', which is merely one aspect of it) had to remain underexposed. It was dealt with in some detail in Van Buuren (2005), which may be summarized by the definition given there, where (+) indicates optional syllable: rhythm is the 'RAPPING' of events within one's psychological present into (hierarchies of) TROchees, (+)DAC-tyli, (+)amPHIbrachs(+), iAMBs, anaPAESTs(+) and/or MONES. 'RAPPING' here stands for: organizing by the Rhythmic Alternation Principle referred to in lines (5) and (16) above, i.e., no more than two weaker between stronger stresses and no more than one before/after #. The concept of 'présent psychologique', corresponding to our 'piece' or neurocognitive 'loop' derives from the outstanding *Psychologie du rythme* (Frisse 1974), as do indeed most of our views on the subject of rhythm.

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DOLPHIN WORDS AND WOLF WORLDS: ETHOLOGY, PHILOSOPHY, SELF, AND NAMES

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IN THIS PAPER I SUGGEST THAT SEVERAL FINDINGS IN ETHOLOGY have implications for two traditional questions in philosophy, specifically: *what is a self?* and *what is a name?* Others have broached the impact of ethological evidence on philosophy by applying research results to ethical questions and issues, and using data from comparative psychology and the observation of animal minds in the wild to create and support arguments for the personhood of chimpanzees (*Anthropology Today* News/Calendar 2007:28–29) or the moral patiency of dolphins (MacIntyre 1999 *passim*, White 2007 *passim*). I focus on the more ontological notions of *name* and *self* in order to show the relevance of ethological findings to philosophical theories, and review recent research on wolves and dolphins in support of this thesis. A primary premise here is that minds are necessary for the creation of names for selves; thus, in order to show that certain animals have minds and selves, it is sufficient to show that they have and use names in a fairly traditional sense of the word *name*. This paper argues specifically that there is good evidence that dolphins have and use names, and some evidence that wolves understand names, though their conceptual structures may in other ways be very different from our own. The ways in which these two social, top-of-the-food-chain predators use and respond to name-like uniquely identifying tags reveal the boundaries of our notion of *name* and suggest potential similarities in human, dolphin, and wolf *selves*.

Social animals seem to require some mechanism to help them identify individuals (mates, allies, enemies) in order to survive. Dolphins (specifically, *tursiops truncatus* dolphins, seen on the popular television show “Flipper”) and wolves (specifically, the American grey wolf, *canis lupus*) are both social species that rely on a variety of vocalizations to communicate and navigate. This paper focuses on these two social animals in order to explore the semantics behind their vocalizations.

1. DOLPHINS. Dolphins generally live in pods ranging in size from about 6 to 20 individuals, and males pair bond for extended periods to court females. They hunt cooperatively and in an organized way, sometimes even with humans (Pryor & Lindburgh 1990). The young have an extended period (about five years but ranging from four to nine) of dependency on their mothers and on the social structure of the pod as a whole, and individuals appear to be identified via *signature whistles*.

Dolphins use a variety of whistles, clicks and burst pulses to navigate through dark and cloudy waters, to locate young and other members of the group, and to hunt (Connor 2007). Signature whistles are persistent, uniquely signifying frequency patterns emitted

by individual dolphins on a regular basis (Janik, Todt & Dehnhardt 1994). They develop in the first six months of life, with sexually- and socially-based divergence in whistle patterns taking shape very early (Sayigh *et al.* 1995). Female juveniles will develop whistles that are very different from the whistles of mother, sisters, and aunts in the pod. As they will spend much of their time together over the course of a lifetime, the distinctness of the whistles probably facilitates mutual identification and cooperation. In contrast, males develop whistle patterns that are quite similar to those of their mothers. Presumably, this facilitates mutual mother-son recognition when free-ranging males encounter their original pod after months of hunting and mating in distant waters.

Further, reciprocal imitation of signature whistles by con-specifics appears to serve a variety of social functions (Watwood, Tyak & Wells 2004). *Tursiops truncatus* dolphins appear to use signature whistles to identify friends, mates, offspring, and foes. They call out to each other, combine whistles to advertise alliances, and imitate even computer-generated whistles when such whistles are useful to identify objects and communicate with trainers (Herman 2002). The flexibility of the use of whistles, and the persistent social use of signature whistles (Janik, Sayigh & Wells 2006) suggests that they serve many of the apparently functional purposes of a name.

2. NAMES AND DOLPHINS. In order to apply this information on dolphin vocalization use to philosophical theories of names, I will discuss several pertinent features of names, and how these features are connected to selves. The philosophical literature that attempts to delineate the essential features of names is vast, and I will not try to consider all theories in a comprehensive fashion. Rather, I will list what some of the most relevant features of names seem to be in the context of a natural setting that includes evolutionary considerations such as survival and reproduction. If we are to justifiably claim that animals such as dolphins and wolves have names in a way that is similar to that of humans, then these features must be found in their use of identifying vocalizations as they are in our own.

Names, as identifiers of individuals, are only necessary in social settings, and are more likely to emerge when cooperation with and identification of group members is evolutionarily advantageous. Solitary animals have no obvious need for names, while social animals could plausibly use names to identify kin, social enemies and allies, potential mates, and offspring. Thus, the first obvious feature of names is that they could serve to locate the self in a social network.

However, while names must identify, identifiers need not be names. A social setting alone is not sufficient to create a priority for individual discrimination in all contexts, as recent meerkat research suggests (Schibler & Manser 2007). Signature whistles may be simply construed as identifiers with a function similar to that of faces, i.e., as the acoustic equivalent of faces, providing a tag for individual recognition without importing more deep and rich notions of a persistent, individuated self and the theory of mind that might emerge from that self-concept. Social groups that gain an evolutionary advantage through the cohesiveness of their members may use identifiers not to select individuals, but to maintain group collectivity (Janik & Slater 1998). Likewise, wolf howls may have properties that potentially identify individuals uniquely, but maintenance of the pack aggregate through

vocalization may be more important than specifically identifying individual pack members (Tooze, Harrington & Fentress 1990; Theberge & Falls 1967).

Thus, true *names* must be more than just individual identifiers. They must gain their meaning in connection to their referent in order to be more than just a face, or an individuating marker. Rather than analyzing the meaning of names in terms of concerns about fictional bearers (Katz, Baker & MacNamara 1974) or the opacity of reference (Sharvey 1972), I suggest that theories pertinent to names as they might be used in the wild connect to the referent internally (through self recognition) as well as externally (through recognition of an individual by others). That is, for a name to be a name, its bearer must understand that it is a self that is named.

The suggestion is justified as follows. The description theory of names, (Russell 1905, Searle 1970 *passim*) suggests that names are simply abbreviations for a set of identifying descriptions. Thus, when I use a name to refer to a person, and you recognize the one to whom I am referring by that name, then you must share my beliefs about most of the descriptions, or most of the important or definitive descriptions, of that person's history, actions, personality, etc. This theory allows us to use the name "Santa Claus" to refer to a set of descriptions of a fictional character, and all participants in a culture understand what the name points to, even though the name does not actually designate a real person. Description theory is intuitive in its explanation of human naming practices, as we do remember others through their actions and history, and we use names to help us sort information about people, even if those people are fictional.

In contrast, dolphins appear to be self-named at a young age, before they have much history, personality, or repertoire of action. The description theory of names was developed in order to explain how it is that names uniquely designate their bearers, and in the case of dolphin culture, especially in the case of a live birth of twins, it fails to explain how dolphins could distinguish their offspring before they have developed descriptive features such as history or personality. (Similarly, human name bearers are named with few descriptive features beyond parental bonds and family narratives.) Further, the ability to accommodate names of fictional characters (a virtue of the theory for humans) may well be unnecessary in dolphin society. Description theory, then, has its limits for explaining the uniquely identifying nature of the signature whistle.

Kripke's causal view of names (Kripke 1980 *passim*), in which names refer to individuals independently of their history and attributes, may be a better model to use. For Kripke, names become attached to individuals at a "dubbing ceremony." This theory of names attaches names to individuals across possible worlds, i.e., no matter what their choices or actions are. Neonatal dolphin whistle patterns quickly morph into labeling vocalizations that are then used by others in the pod, thus suggesting a form of self-dubbing. This theory is intuitive for describing name use in human society, as well, as we often believe that we could have done other than we did in many situations, and that we are more than the sum of our past choices. We like to believe that we have the same name, and are the same person, however, even if we had chosen to do something differently.

In order to plausibly suggest that Kripke's causal view of names adequately encompasses dolphin signature whistle use, I must show that dolphins have the ability to apply symbols

to objects, recognize themselves, and distinguish self from other, because these abilities are necessary for a dubbing ceremony to take place.

Fortunately, cognitive ethology and comparative psychology again provide evidence for the philosophical view. As mentioned earlier, dolphins have been shown to easily mimic and use computer-generated whistles that are paired with objects in Lou Herman's lab in Hawaii (Herman 1986), and they readily use Diana Reiss's symbol board at Africa USA (Reiss & Marino 2001). Herman has shown that they *also* respond well to fairly complex commands, with up to 84% accuracy in executing requests that depend fundamentally on word order for their proper completion (Herman 1986). This facility in syntax and use of symbols to encode commands and execute actions suggests the capacity for more than just a simple language bearing names. Dolphins have the ability to use symbolic vocalizations to identify objects.

But, if they use names to refer to selves, we must ask if they can recognize themselves as selves. Aside from the obvious evolutionarily based notion that any surviving creature must be able to distinguish self from environment (Nessier 1993 *passim*) there is ample laboratory evidence that they recognize themselves in mirrors (Reiss & Marino 2001), participating in self-examination just as Gallup's chimpanzees did in the 1970s (Gallup 1970), and watch conspecifics on television with enthusiasm, appropriately swimming to the tanks where the conspecifics on the video monitor are being fed dolphin delectables (Marten & Psarakos 1995). Their ability to examine themselves in mirrors reveals they must have at least Nessier's ecological self, because the use of a mirror demands kinaesthetic visual matching as well as the recognition that reflection is possible, and that there is a physical self to be reflected on some given surface. In short, they seem to meet the necessary conditions for being able to participate in a dubbing ceremony, and use a symbolic vocalization to refer persistently to a specific individual. They have the capacity for, and some behaviors indicating that they do, indeed use names as referring expressions for selves.

Dolphin societies are neither similar to the nuclear family model, nor often described as hierarchical with dominance relationships (and when they are, there is usually concurrent mention of affiliation and social bonds). Dolphins generally live in small stable groups of females and young. Adult males bond with each other to form coalitions. While this difference in the description of dolphins and wolves could be a human by-product, as we often tend to see male-based social structures as dominance-oriented and female based social structures as affiliative. But we can also consider the lesson that different societies may be structured very differently from our own, despite our similarities in predatory disposition and in raising young.

Dolphin name uses resulting from these structural societal differences do stretch the boundaries of theories accounting for typical human name use. As it has been shown recently that male-male coalitions will significantly change or merge their signature whistles upon forming a bond (Smolker & Pepper 1999; Watwood, Tyack & Wells 2004), we find that names in dolphin societies are moderately mutable things that may designate partnerships rather than individuals as denoted entities. As names designate selves, this suggests a flexible, social, changing, and merging self that is far more complex than a self that simply receives a static name at a dubbing ceremony. Human theories of names struggle with

an explanation for the persistent and accurate use of a symbol to designate and identify a relatively stable self—a self that remains named through a language-free stage of infancy, the cognitive decline of mental illness or aging, and the entry into a new culture when the individual moves to a new town or country. Even feminist theories of the human self that include role in society and social bonds as an integral part of the self do not go so far as to tailor the name of the individual to the current social group or alliance (though there has been ample debate on the significance of marital name changing). Thus dolphin practices and the implied dolphin selves open new doorways for philosophical discussion.

3. **WOLVES.** Wolves (*canis lupus*) live in structured packs and form stable (though not necessarily permanent) partnerships with mates. They cooperate to guard and raise young as well as hunt and defend territory. In both wolf and dolphin research there have been recorded cases of loners, but the rule is that they are predominantly social and clearly vocal. Wolves bark, growl and howl to greet one another, to show aggression, to locate one another across distances of up to ten miles, and (especially for chorus howling) for unknown reasons.

Wolves and canines in general have the ability to share gaze, to follow gaze direction (though wolves are less inclined to do so than dogs), and to attend to (proximal) ostensive pointing; these traits, too, are descriptive of essential human cognitive capabilities (Kubinyi, Virányi & Miklósi 2007).

Wolves live in highly complex hierarchical societies. There are alpha wolves and omega wolves, though there is a rich dispute in the field as to what exactly being *dominant* or *submissive* means. For example, dominance could suggest leading the pack, making decisions about hunting expeditions and whelping grounds that impact the pack. Or, dominance could simply indicate ‘more likely to have first access to the food’, or ‘more likely to be groomed by other wolves’, or ‘more likely to mate’. Such differences of opinion are found in the world of dogs as well, where Cesar Millan (2007 *passim*) advises the trainer to act as the calming-assertive and powerful alpha, and Turid Rugaas (2005 *passim*) suggests the dog owner send calming and nurturing partnership signals to the nervous dog who is unclear as to its relationship to the pack. The very variety of prescriptions for dog training and for understanding wolves suggests that our theories have yet to capture the selves and communication that take place within their complex social structures.

4. **WOLVES, DOLPHINS AND ALTERNATIVE CONCEPTUAL WORLDS.** These differences continue along the perceptual axes: wolves (and dolphins) are both highly auditory in nature. Our visual world is replaced, reconstructed, and/or translated into auditory constructs as we try to understand the *umwelt* of an animal with a different perceptual structure. In his piece considering the Kantian perceptual manifold of the dolphin, Jerison (1986) points out that echolocation may be similar to human language not in its capacity for meaning, but as its ubiquity and status as a background condition for all other conceptualization or action. Because dolphin and wolf life emphasize the auditory, auditory objects may be the most “real”—far more so than visual objects—for both of them. Just as humans will use vision as a final and confirming check as to the nature and status of a perceived object, and we do use the notion of vision throughout our epistemic endeavors (“the clear light of

reason", "seeing is believing", etc.), so dolphins and wolves will default to audition. Thus, for Jerison, such fundamental structures of reality as *space* and *time* are probably constructed by dolphin and wolf brains using auditory event markers rather than the progression of seen objects in motion.

The extrapolation of Jerison's comments to the wolf world brings us interesting notions of new conceptual schemes. Given that the foundation for all, or at least many, of our concepts is perceptual, at least according to recent research in cognitive science, how different must the wolf world be? Wolf hearing spans far beyond human hearing in terms of breadth (beyond 25kHz) and acuity (beyond six miles on the tundra). Further, while dolphins do not experience olfaction at all, wolves experience an olfactory world more than 100 times more sophisticated than our own (Busch 1998:28–29). Like the popular myth that attributes 500 words for *snow* to peoples living above the arctic circle, might wolves have a non-mythical version of alternative, primitive, varied (and non-human) beliefs (MacIntyre 1999 *passim*) that encompass subjects of olfactory nuance that humans cannot conceive?

Beyond an expanded conceptual set for odorific nuances and auditory details, how might such perceptual powers impact the mental lives of animals? As Jerison noted, space and time may be constructed by non-visual events: a sense of time, place, and personal location may emerge from frequency of odors and memories of sounds. To continue the Kantian theme, causality itself may be very different for wolves than for humans. Humans will readily establish causality based on timing and sequence of visual stimuli—Gazzaniga's famous Humean experiment (Fugelsang *et al.* 2005) in which subjects watched one virtual pool ball strike another, followed by motion in the second ball, showed that people only attributed causality to the first ball if the second ball moved within a fairly short period of time. If five seconds passed and then the second ball moved, witnesses suggested an invisible and inscrutable cause of the second ball's motion, rather than attribute the movement to energy transferred from the first ball. Humans clearly attribute causality according to visual cues.

Wolves, as less visually oriented creatures, may establish causality based on sequence with less dependency on time. Canids pay rapt attention to the urine markings of other canids whether the markings are today's or yesterday's. They can hear comrades and prey that are miles away—and thus they are aware of the proximity of individuals of concern even though the eventual meeting or kill may take hours to achieve. Recall Dennett's notion of *temporal chauvinism*—he notes that humans in fact do not attribute consciousness to slow-moving objects such as mountain ranges (Dennett 1996:61–64). After all, mountain ranges do move, and could be construed to move as purposively as cartoon characters, but we do not perceive the motion and so do not attribute mental states to them. The human brain attributes animate qualities only to creatures with temporal dispositions similar to our own. Dolphins are certainly more like us than wolves are in this respect—dolphin echolocation clicks are rapid and elegantly timed, their whistle responses are rapid, and their sound processing is almost immediate. Causation for them may be more like our own—we expect that if X impacts Y, it will do so within a fairly short period of time, or not at all. Wolves may actually be able to classify things that change more gradually as alive, because they can configure change in the world to be caused at a slower pace.

5. WOLF WORLDS. What parts of the world can we share? I first quickly look at human children's processing of language and then discuss wolf responses to names.

Human children readily understand words used by others that are directed toward single, animate objects as names, and take them to be such unless other stimuli interfere (Katz, Baker & MacNamara 1974; Hall 1994). This seems to be a human biological and psychological predisposition that facilitates (if not causes) the learning of both proper names for self and others, as well as common names such as "horse" and "toaster". Children seem to adapt well to potentially confusing double-label stimuli such as "This is Herbert, and this is a Dog". Thus they understand easily that an object can be named as an individual and as a member of a class. Katz, Baker, and MacNamara note that, "What children learn to begin with is that the individuals of certain classes are important as individuals. Thus individuality is never merely that, but the individuality of a member of a class" (469).

Wolves that have been raised by humans and thus exposed to naming practices respond to names well and quickly, approaching the human caller when the name is called, with the longest response taking 46 seconds (Kubinyi, Virányi & Miklósi 2007). Wolves also respond to other human calls (such as howls) regularly, but respond by howling rather than by behaving as if a howl is a designation or a beckoning sign. Thus, their behavior suggests that they understand that things can be named, or at least individually identified and beckoned, and that the human vocalization of the name is distinct from human-produced howls. This is all the more interesting considering that at Wolf Park, Indiana, keepers report that they can distinguish each individual wolf by its howl, echoing the "signature whistle hypothesis" with a notion of signature howls.¹ Thus, howls could serve in an identifying role among wolves, yet they understand and respond to human name vocalizations. This in turn suggests a self that can receive and understand many names—perhaps a self that is internally stable through different contexts (wolf and human), as well as a self that can take itself to be the object of a variety of labels.

6. CONCLUSION. This paper has surveyed and discussed the evidence provided by ethological research regarding the conceptual and referential systems of dolphins and wolves with an eye toward revealing mismatches between philosophical theories of names and naming practices in the wild. While more research is needed, especially toward our understanding of the mental world of the wolf, preliminary evidence suggests that both wolves and dolphins are capable of using names to refer to selves, though these selves may be more fluid and alliance-based than most common notions of human selves will accommodate. Ethology asks us to reevaluate our theories of naming, focusing our considerations less on the names of fictional characters and referential opacity, and more on how names can connect to selves that live in a context driven by evolutionary forces. Ethology has the potential to guide philosophy, and philosophy can help ethologists understand what human concerns

¹ Also, apropos to the LACUS conference at which this paper was presented taking place in Richmond KY, the horse capital of the world, a horse researcher acquaintance of mine, Dr. Grace Campbell at University of North Carolina, Asheville, notes that she can distinguish the individuals in her herd by "signature whinny".

have been, and how to proceed regarding conceptualizing the minds and vocal communication of animals. Social predators share much with humans, and the boundaries of our worlds provide fertile ground for new understanding of the ontology of names and selves.

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PEOPLE, ORTHOCONCEPTS, AND DIALOG

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Hearing comes first in development and evolution, then speaking for humans, and writing last if at all. Tradition unfortunately often has it backwards. Human (hard-science) linguists puts it right, accepts only standard science and studies the real physical world.

THE PARAMOUNT ISSUE FACING OUR DISCIPLINE TODAY is whether linguistics should be a study of language or should it be scientific? It cannot be both. We now know that the usual definition of linguistics as the scientific study of language is impossible. Whatever language is, it is not a real object that can be studied scientifically.

Hard science linguistics (HSL) puts science first. It studies people and other relevant parts of the real world rather than some unreal concept of language. That way it can be a true hard science.

To be accepted as a hard science, a discipline must study only objects of the real physical world. For linguistics that means people, sound waves, other means of communicative energy flow, and other parts of the real-world surroundings. These can then be represented in theories as systems characterized in terms of properties. The predictions of the theories can then be tested against the real world by means of observation and experiment. A good way of ensuring that these requirements hold in linguistics is to work in human (hard-science) linguistics, where the foundations have already been scientifically justified. This may be the only body of linguistic theory that qualifies as a standard hard science.

In relation to the theme of this conference, it is now not such a stretch to ask whether the same theory used for studying humans could also be used for studying other species. One would not have to try to do it indirectly through language. One would not have to ask whether a dog or a horse has language and get into the murky question of what language is. And it would become easier to investigate whether we can understand the human case as the result of known evolutionary processes.

1. NARRATION AND DIALOG. Most previous works that have treated narration and dialog have been in the logical domain of philosophy or language and grammar and thus cannot be counted as science, nor can their results be accepted in science.

This paper does, however, include a treatment of narration and dialog. How can we treat narration and dialog but not language, which is not a real object? Hard-science linguistics actually provides facilities for analyzing narration and dialog that are richer than those available in the linguistics of language because it provides two interrelated theories, one at the individual level and one at the social level, whereas the linguistics of language provides

only one theory, language, and it is not capable of handling people communicating at all in any scientifically justifiable way.

Building on orthoconcepts introduced in earlier LACUS papers, we are already beginning to be able to handle the meaning in narration and dialog to a limited extent, as you will see in this paper.

2. THE RESEARCH QUESTION. We will try here to wring some more insights from the children's playground game of tag, which has been so productive in linguistics research.

Five children: Al, Butch, Chris, Dale, and Ed are on a playground playing tag. Butch is initially 'it'. Joel observes the game and understands it in terms of what some might see as the meaning, that is, in terms of orthoconcepts. Joel then narrates the game by cell phone to a reporter, Sam, who then also understands it in terms of orthoconcepts.

Our task is to formalize what is going on in appropriate hard-science linguistics theory. This exercise will provide insights and develop HSL methods of analysis that can be applied in the future to more complex scenarios and communicative situations and eventually to naturally occurring videotaped communicative interactions. This research tactic is reasonable also when one remembers that children learn to understand and talk about simple matters one at a time first and only later go on to more complex matters. They learn incrementally, not all at once, and in the meantime they can communicate at ever increasing levels of sophistication.

3. FORMALIZING THE GAME. To start we set up systems for the children, both individually and collectively, and specify properties of the systems.

We set up a tag linkage system [tag linkage] for the children playing tag on the playground, and five systems [child] for the five children as role parts, each with a property <name> followed by values for the individual children's names as in (1).

These are the playground names of the children, possibly different from their names in other roles or situations as at home or at school.

- (1) [tag linkage] =
 [child]<name/Al> +
 [child]<name/Butch> +
 [child]<name/Chris> +
 [child]<name/Dale> +
 [child]<name/Ed>.

To formalize the children playing tag, let [X] and [Y] be any two of the children with [X] having the property <it> and [Y] having the property <-it> (not 'it').

We will make use of theory and notation given in earlier LACUS papers but instead of [X]<touch>(Y), where the use of parentheses was somewhat anomalous, we make [Y] a value of <touch> and use [X]<touch/[Y]>. The slash makes it a value and the brackets distinguish it as a system. With this we have (2):

- (2) [tag linkage] = [X]<it> x [Y]<-it> x [X]<touch/[Y]> :: [X]<-it> x [Y]<it>; Δt_1 .

Here x means 'and' and <touch> is the property of a child touching another child and /[Y] is a value specifying the child touched. The double colon :: means 'sets', so the expression means that if [X] has the property 'it' and [Y] has the property 'not it' and [X]<touch/[Y]> then [X] is set to the new property 'not it' and [Y] is set to the new property 'it'. There is a variable time delay Δt_1 . This is the time required from when [X] becomes 'it' to choose a child to chase, to chase that child, and to touch that child, thus becoming 'not it'. The value of Δt_1 is controlled by the variable time required for the children to execute this step of the game. The game then continues with the new child Y initially being 'it'.

So HSL is dynamic and it takes account of the time required for things to happen. It's not like the linguistics of language, which is static and no note of the time is taken, producing an analysis that earlier was sometimes dubbed a marble slab approach, where lifeless utterances were laid out and dissected. This was particularly clear in the case of phrase-structure grammar and transformations, which explicitly did not take place in real time but were some sort of unreal abstractions, and this accounts for the impossibility of those theories to properly handle the evidence behind the depth hypothesis, which is dynamic and requires taking the time into account.

Time will figure in our analyses in other ways as well. There may be the time required for the observer to sequentially observe what the children are doing. This time is controlled not by the children playing but by the observer observing. Then there is the time required for the observer-narrator to narrate what is observed. This time is controlled by the timing of speaking.

4. OBSERVING THE GAME. Joel is the observer [O]. To formalize Joel observing the game and understanding it in terms of orthoconcepts we write (3):

- (3) [observing linkage] = [O] + [tag linkage].
 [O]<expect game> = <(view of children playing)> + <expect view of
 [X]<it> x [Y]<-it> x [X]<touch/[Y]> :: [X]<-it> x [Y]<it>; Δt_1 ' >
 <match> N <try again> Y ->
 <See ([X]<it> x [Y]<-it> x [X]<touch/[Y]> :: [X]<-it> x [Y]<it>; Δt_1 ,
 <children playing tag>,
 <[X]<it>>,
 <[Y]<-it>>,
 <[X]<touch/[Y]>>,
 <[X]<-it> x [Y]<it>; Δt_1 >,
 <[X]<it> x [Y]<-it>>).

The above is what Joel, the observer [O], sees in terms of orthoconcepts as properties of the role part [O] in the superordinate linkage [observing linkage]. Joel would appear to be very observant. It includes an instance of tagging and other details. This is possible for Joel

because Joel knows tag and expects to see these things. Someone not knowing tag would not see them.

No attention has been paid here to the sequential aspect of observing, but we could expand the analysis to take that into account if we wished, as well as the time required for the various steps of observing the game.

5. THE CELL-PHONE CHANNEL. The kids communicate by cell phone, which they use almost as toys.

Using small letters for the phones (which are real) we have (4) and (5):

(4) [Sam], [s], [Joel], [j].

There is the cell-phone property <c> (connected).

(5) [Sam]<call/[Joel]> =
 [s]<-c> x [Sam]<lift/[s]> :: [s]<c> ->
 [j]<-c> x [Sam]<ring/[j]> :: [j]<ringing> ->

 [Joel]<expect sound> =
 <(sound heard)> + <expect sound of 'ringing'> ->
 <match> N <try again> Y <hear sound of 'ringing'> ->

 [j]<ringing> x [Joel]<available> :: [Joel]<answer>.
 [Joel]<answer> = [j]<ringing> x [Joel]<lift/[j]> :: [j]<-ringing><<c> ->.

This ignores busy signals, which could be included if desired. It treats [Joel] expecting and hearing the phone ringing. And it gives [Joel] the option of not being available or not answering.

Now the parties are both connected to the cell-phone channel.

6. SETTING UP THE CONVERSATION. Sam is a pretend reporter who wants to write about what Joel is doing. Joel is observing the tag game and is a pretend correspondent covering the game. They communicate by cell phone.

There is a property <play/real> for the children set to <play>, which will be carried through all the events discussed and need not be mentioned further in these formalizations. But we hope to achieve some real insights about communicating.

Leaving the cell phone channel and the details of the calling behind we can now turn to setting up the conversation.

Sam has rung Joel's phone and Joel has lifted it.

Use the role-part property <inconv> for 'in conversation'. Initially <-inconv> as in (6):

- (6) [Sam] <-inconv>, [Joel] <-inconv>.
 [Joel] <emit sound of 'Hello'> ->
 [Sam] <expect sound of 'Hello'> -> <match> N <try again> Y <hear sound of
 'Hello'> <inconv> ->.

We could install the appropriate time delays Δt .

Sam is now in conversation with Joel because Sam hears Joel's 'hello' in reply to Sam's ringing Joel's phone. But Joel is not yet in conversation with Sam since his 'hello' has not yet been answered by Sam. Test: what would happen if various elements were missing, as the line being out of order in various respects? Then we have (7).

- (7) [Sam] <emit sound of 'Hi'>
 [Joel] <expect sound of 'Hi'> <match> N <try again> Y <hear sound of
 'Hi'> <inconv> ->.

Joel and Sam are now in conversation and with each other.

Conclusion: For two individuals playing role parts in a linkage to be in conversation, both individuals playing role parts have to be in conversation in the same linkage. It is possible for only one role part in a linkage to be in conversation, but if prolonged, (Δt timing out) it would be a misunderstanding, which we know how to formalize. Monitoring would catch it and we have all we need for formalizing that: expectations not being fulfilled. Postpone that for now as it is not essential at this point.

The routine for Sam calling Joel appears above. Here in (8) is a simple task hierarchy for Sam calling and querying Joel:

- (8) [Sam] <call/[Joel]> -> <query source> =
 <where> -> <what> -> <who> -> <doing> -> <it> ->
 [Sam] <where> = <emit sound of 'where are you?'> ->
 [Joel] <expect sound of 'where are you?'> ->
 <match> N <try again> Y <hear sound of 'where are you?'> <os/[Sam]>.

Joel is on the spot (os) to answer Sam's query.

We assume here that each child knows who the other on the phone is. This is what we need for the proper use of first and second person pronouns, as the 'you' in 'where are you?' Otherwise we could formalize the situation where they have to recognize the voice or find out who is on the line by asking.

7. JOEL SEES HIMSELF ON THE PLAYGROUND. A property of [Joel] is (9):

- (9) [Joel] <at-location/[playground]>.
 [observe linkage] =
 [Joel] + [Joel-L] = [playground] + [Joel] <at-location/[playground]>.

(where the = sign means the constituents of the linkage [Joel-L] follow.)

Joel understands locations, so [Joel]<see/[Joel]/at-location/[playground]> (Joel sees himself at the playground).

Joel can then easily infer:

[Joel]<know/[Joel]<at-location/[playground]>.

For this we need an inferring procedure for Joel (seeing is believing):

[X]<see>[Y]> : [X]<know/[Y]>

This as a control procedure, with a single colon, but it's probably more complex than that.

According to this Joel knows he is at the playground because in the role part of observer he sees himself at the playground and for him seeing is believing.

(This is preliminary to Joel answering the query Where are you?)

We had Joel on the spot to answer Sam's question of where he is. (10):

(10) [Joel]<hear sound of 'Where are you?'><os/[Sam]>.

There is the question implied here of whether we should analyze in terms of role parts or linkages. The answer is that it depends on what kind of an analysis we want and what we want it to clarify. In the case of tag, the one becoming 'it' and the other becoming 'not it' are simultaneous and inextricably linked. If we want to emphasize that and not look at it as two separate role parts, then it's best to analyze it as a linkage.

How about (11)?

(11) [Sam-Joel L] = [Sam] + [Joel].

[Sam] + [Joel]

[Sam]<query/[Joel]<at-location/[?]> :: [Sam]<-os> + [Joel]<os/[Sam]>

This has Joel specifically on the spot to answer Sam.

How do we go from this and Joel's knowledge of where he is: [Joel]<know/[Joel]<at-location/[playground]> to Joel's answer? How about (12)?

(12) [Joel]<os/[Sam]<say/[Joel]<at-location/[playground]>

This method of analysis may be more appropriate for multi-person conversations. Here they know who each other is on the phone to start with so that need not be at issue.

So use an analysis in terms of role parts (13) until a situation comes along where we need an analysis in terms of linkages.

(13) [Joel]<os/<say/[Joel]<at-location/[playground]> ->

[Joel]<emit 'I'm at the playground.'>.

This ignores solving the lower-level problem of selecting a pronoun to emit and other idiosyncrasies of English. Since in the above Joel is talking about himself being at the playground, 'I' would be appropriate to be emitted. How should that be formalized?

More work needs to be done on this, but I think you can already see how far we have come. Perhaps you would now be able to help move it forward some more and learn more about narration and dialog as the peculiarly human activities that they are.

8. SPECULATIONS ON ORIGINS. It is tempting to speculate on the matters with which we started. What is the possibility of using HSL theory to study how other species communicate?

Would such an endeavor help lead to understanding the origins of human communicative abilities as the result of known evolutionary processes?

It is well known that one of the characteristics of mammals is that they play. They play individually, as a cat with a feather and the babbling of a human infant learning to talk. They also play in groups as puppies chasing one another. Can the function of play here be understood evolutionarily in part as a means for developing skills for successful group membership and successful predator-prey interactions? Would this include chasing games, the predecessors of tag? It would seem that play in groups of two or more would necessarily involve a play/real property.

Can we understand play as functioning in general in the development of individual and role-part properties useful in social interactions as here for tag?

What other HSL properties and procedures would be involved? Is there an important role for expectation procedures?

What other evolutionary factors would be important? How about learning and memory? We know that HSL at present is a theory only of how people communicate not of learning how to communicate. How should learning and long-term memory be integrated into HSL? What would be a proper integrated theory of learning and memory not already disqualified by nonscientific or inappropriate assumptions?

How far would we then be on the way to understanding the evolutionary origins of human communicating? It seems to me that we need to examine carefully and try to test these various speculations that our complex human communicating skills evolved naturally in part out of play.

If we do this, it will probably turn out that in confronting questions of origins there will no longer be any reason or excuse to invoke untestable philosophical theories of innateness or universal grammar.

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LANGUAGE INDEX

This index contains references to languages, language groupings (families, subfamilies, etc.) and scripts (writing systems) or other methods of language representation as they are analyzed or otherwise mentioned in the text. Due to the prevalence of English, all references to or use of English for purposes not related specifically to the analysis of English as a language (such as glosses or concept labels) are excluded. Language or dialect names are in **roman face** and language families and other groupings are in **SMALL CAPS**. The names of scripts or other language representation systems are in *italics*.

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COLOPHON



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